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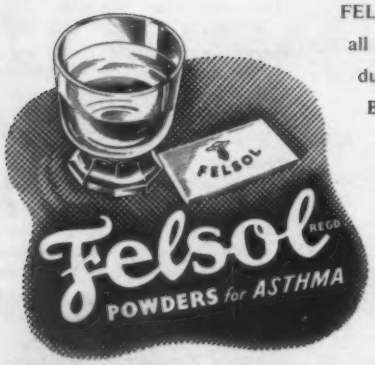

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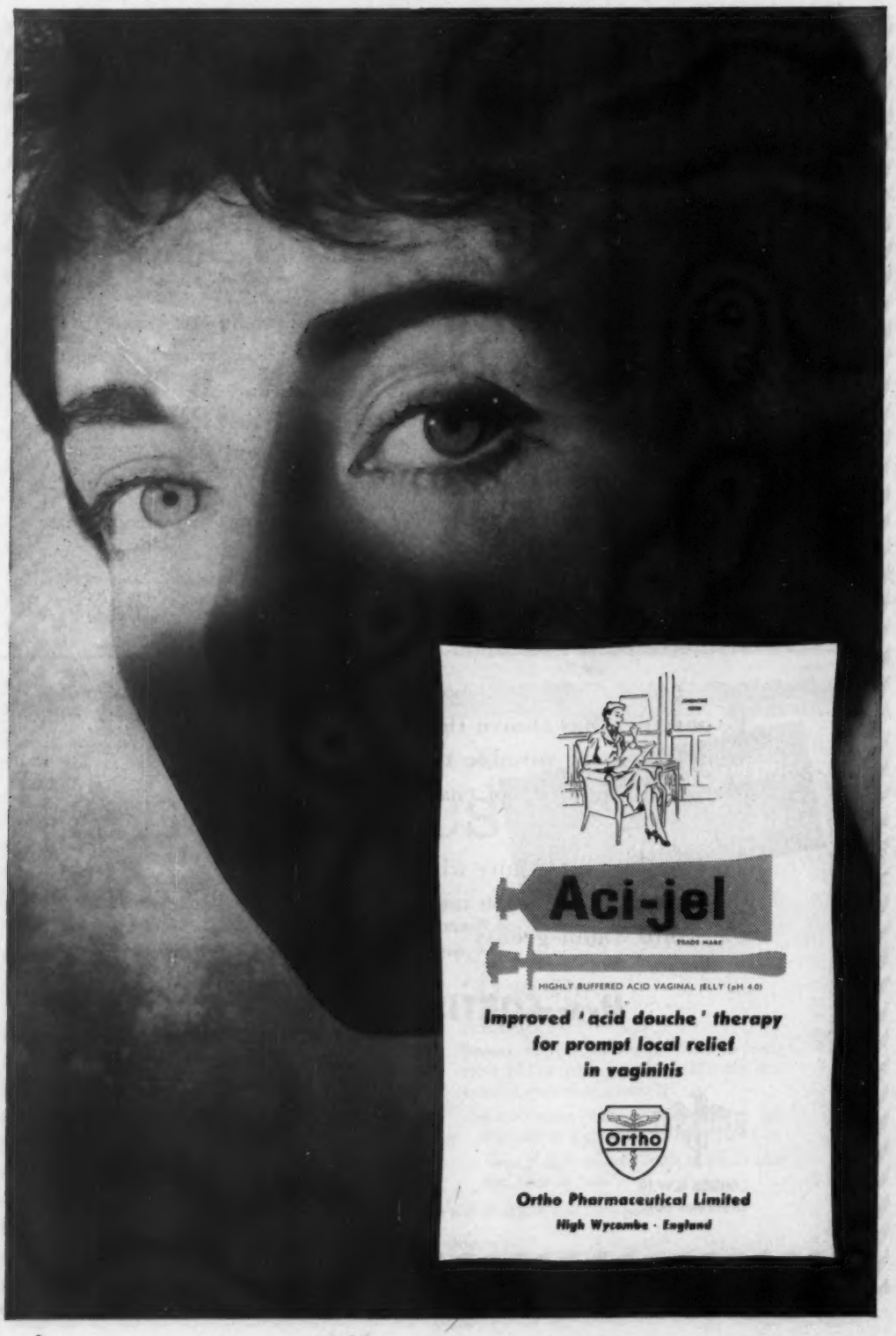
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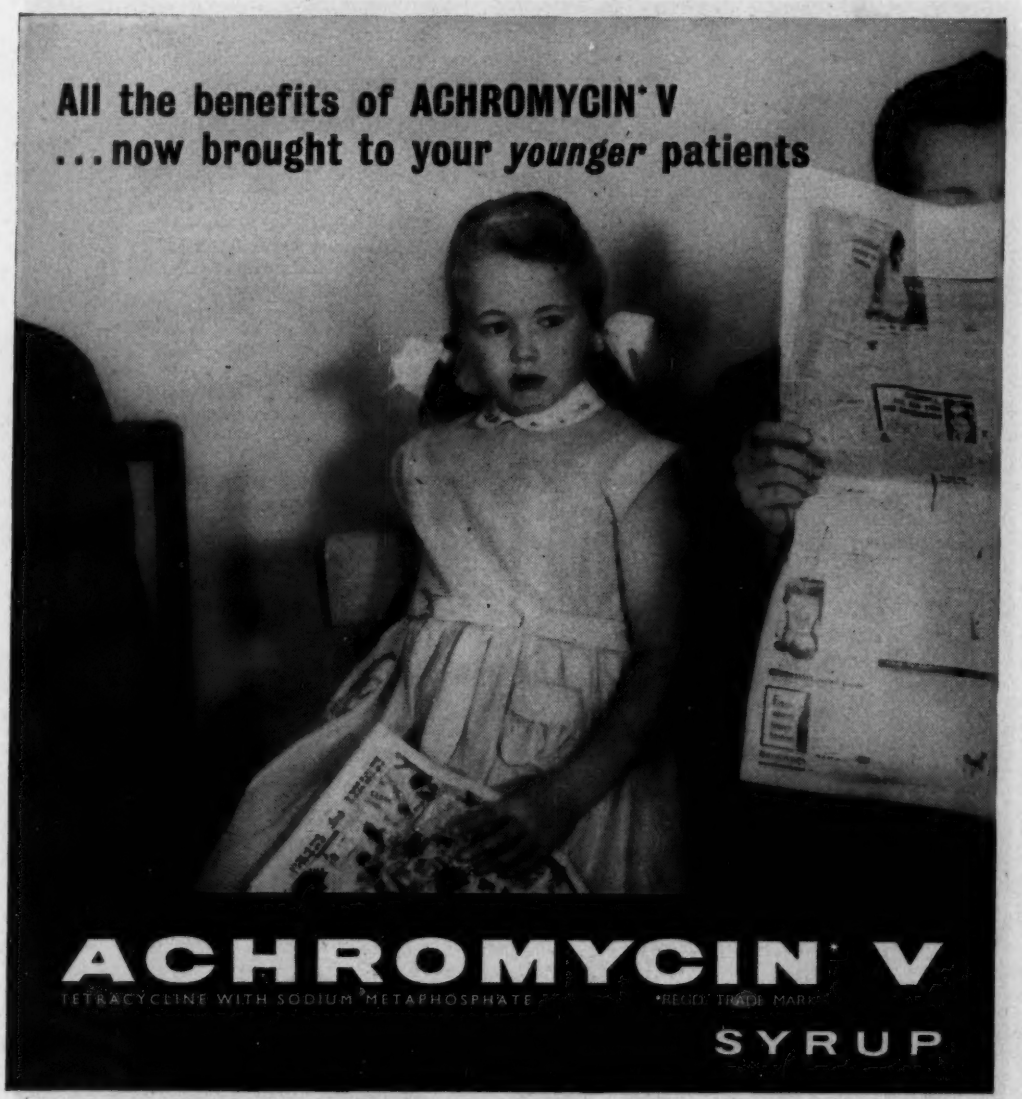

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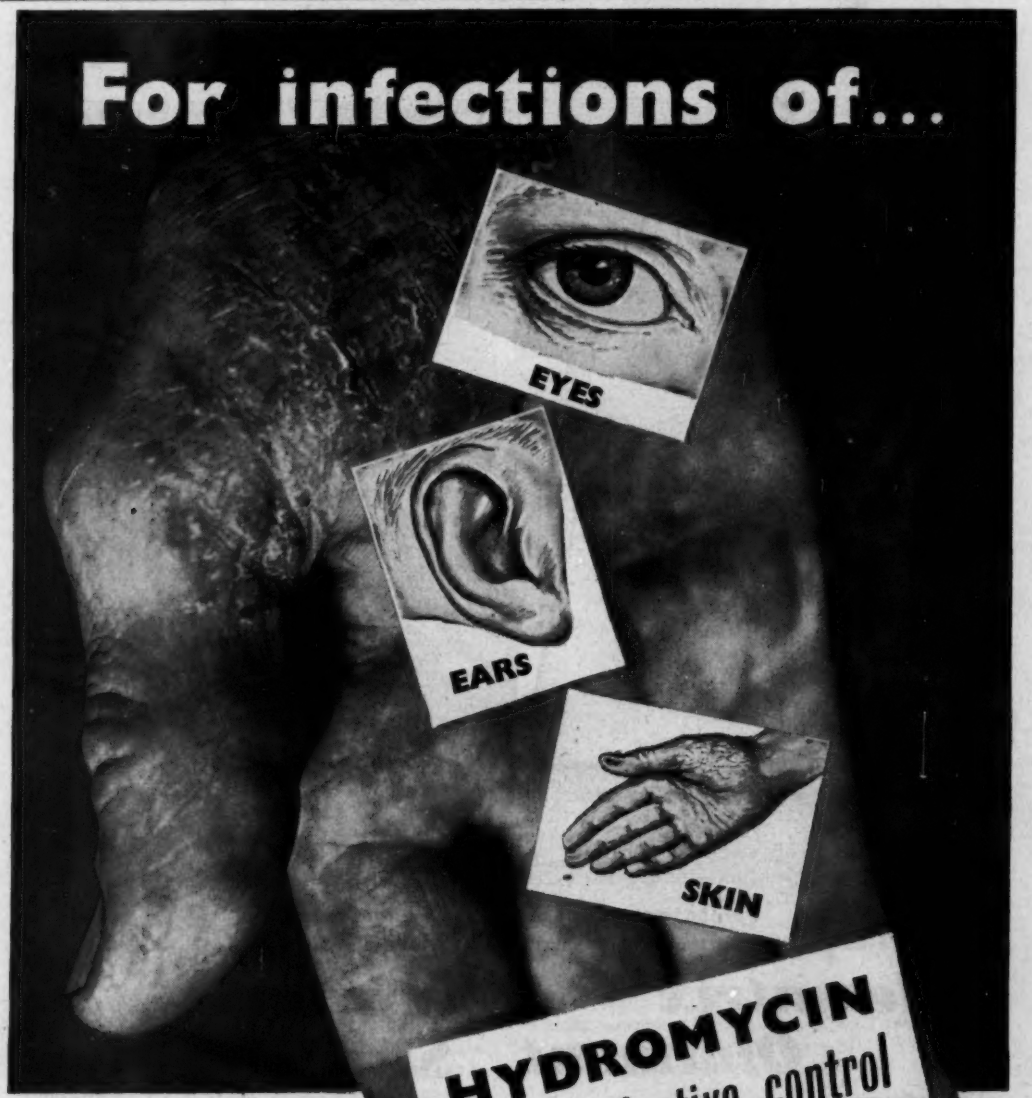

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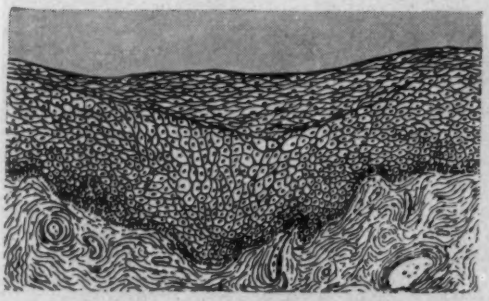

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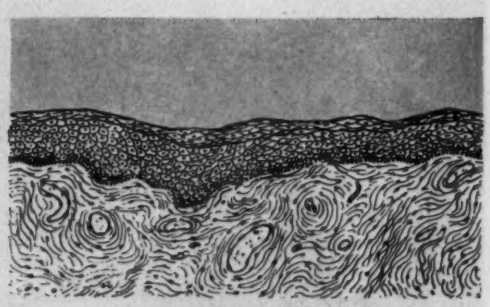
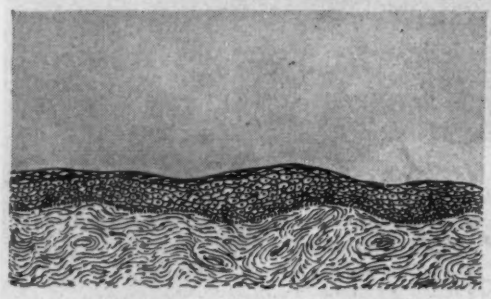
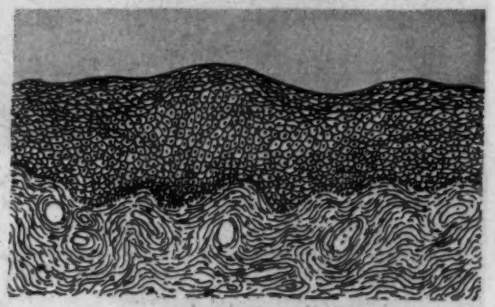


At menopause: reversion of epithelium towards the infantile type.



Post-menopausal, infantile type of epithelium, with thin, atrophic layers.



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†New England J. Med. *247* : 829 (Nov. 27) 1952

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VA : P96

Calcipen-V

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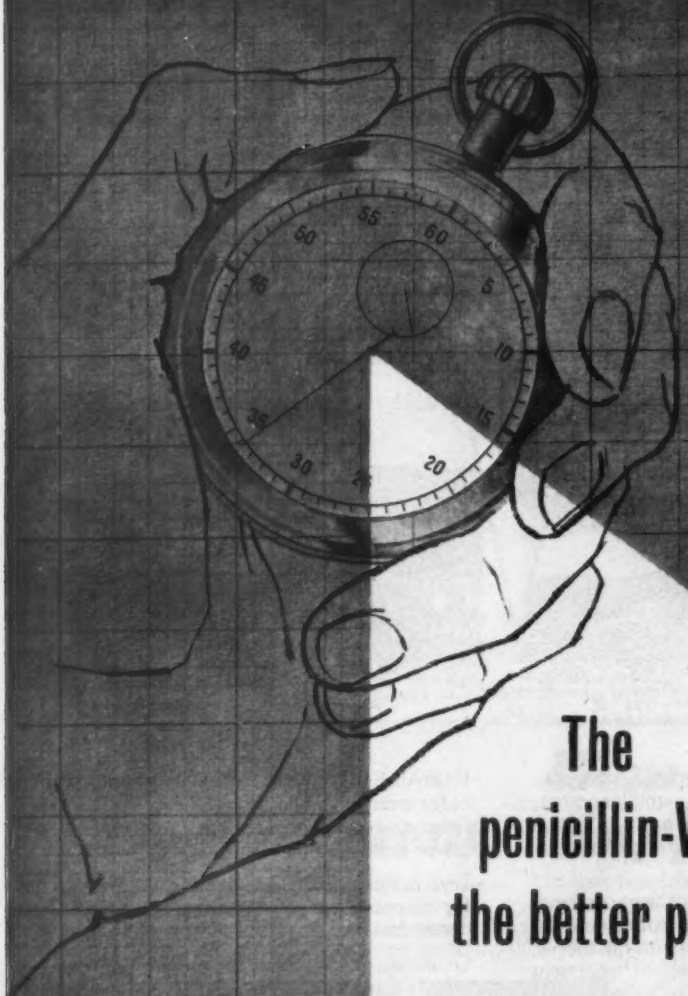

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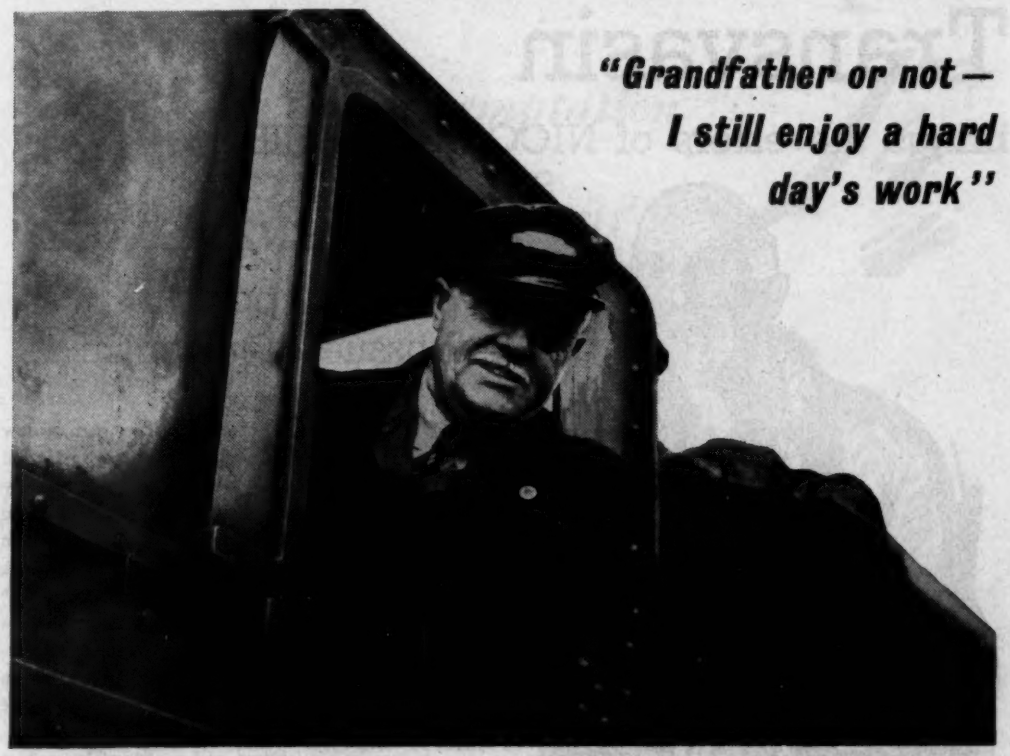

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* *Therapeutische Umschau VIII*, 1952, 10, 143

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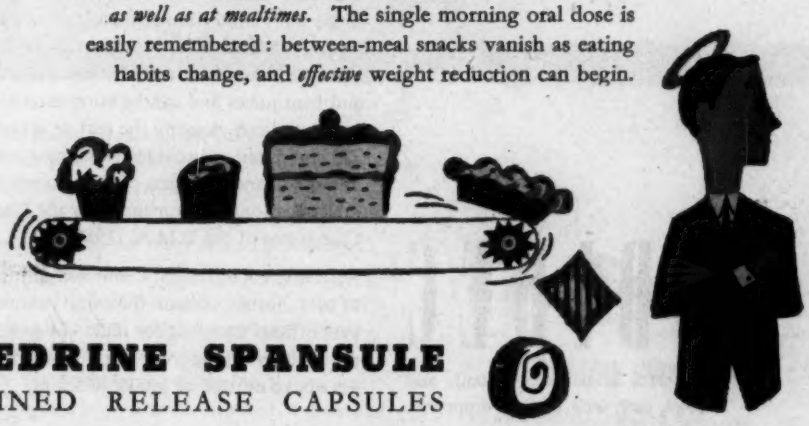

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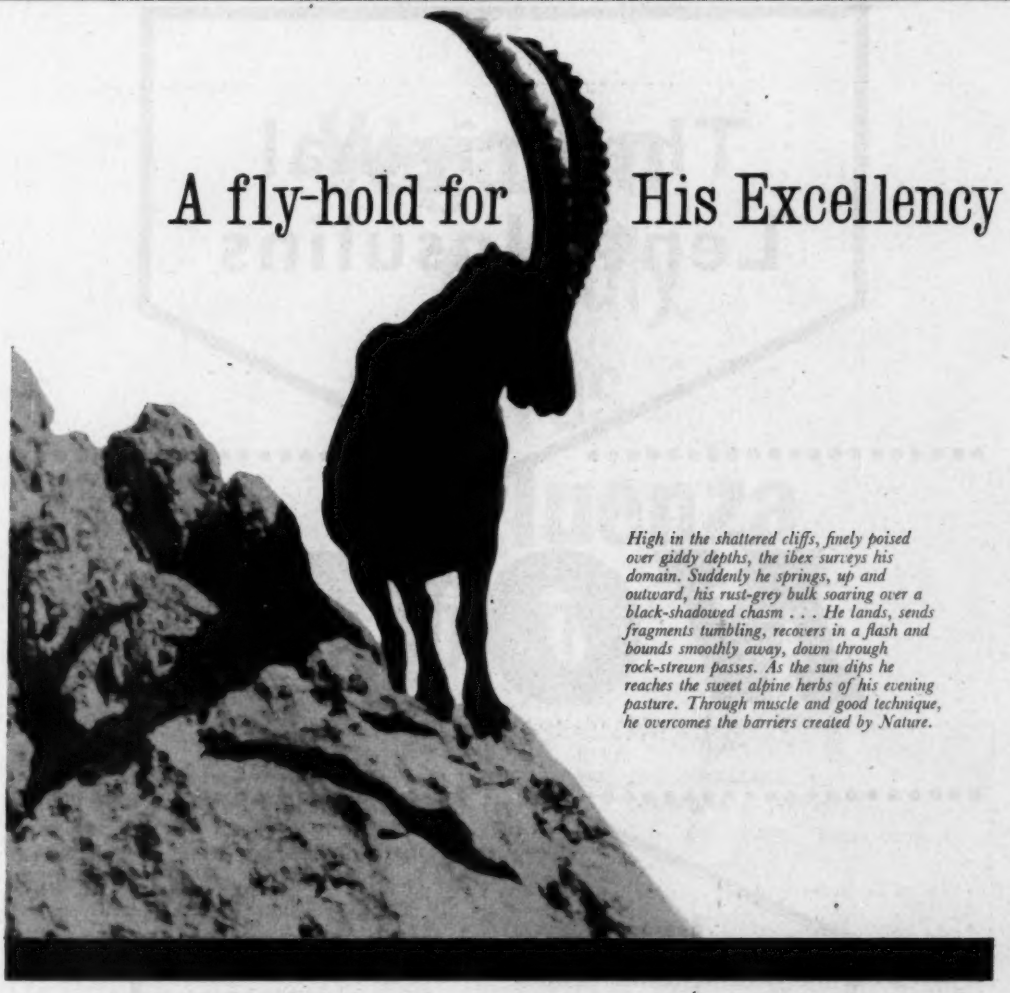

High in the shattered cliffs, finely poised over giddy depths, the ibex surveys his domain. Suddenly he springs, up and outward, his rust-grey bulk soaring over a black-shadowed chasm . . . He lands, sends fragments tumbling, recovers in a flash and bounds smoothly away, down through rock-strewn passes. As the sun dips he reaches the sweet alpine herbs of his evening pasture. Through muscle and good technique, he overcomes the barriers created by Nature.

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PRESCRIPTION INFORMATION *Each 2 ml. ampoule of Imferon will raise the Hb about 2.5% (5 ml. about 6%), in an adult of average weight, as well as contributing to the replenishment of body iron stores. Imferon is available in ampoules of 2 ml. and 5 ml. in boxes of 10 and 5 ampoules respectively. A simple dosage calculator, and notes for nurses on intramuscular injection technique, are available on request.*

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Instructions to patients

1. Go to bed AT ONCE. Delay may be dangerous.
2. Stay in bed until you feel better — at least 2—3 days.
3. Keep warm, but keep your window open.
4. Keep other people out of your room as much as possible.
5. Take plenty of fluids — water, orange juice, warm drinks.
6. Make sure your bowels are acting properly.

REMEMBER THAT:

Rest in bed
Fresh air
Adequate fluids

may well prevent complications.

Veganin MAY BE PRESCRIBED ON E.C.10.

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Aspirin 250 mg. Phenacetin 250 mg. Codeine Phosphate 10 mg.

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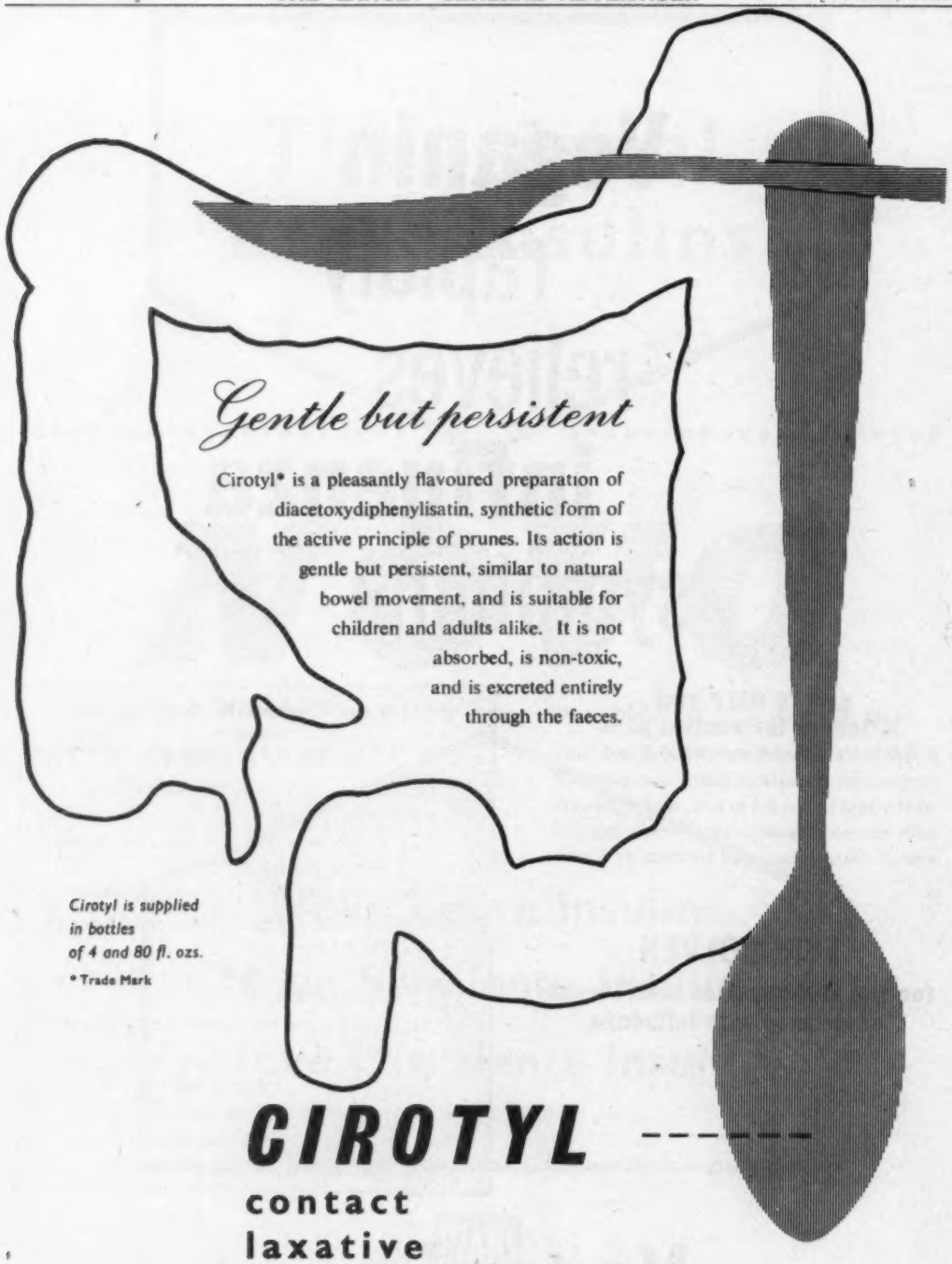

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for more complete medical treatment of peptic ulcer

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To reduce ulcer pain and to delay stomach emptying, so assisting antacid action.

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To neutralise excess acid. The antacid component of 'Kolantyl' is virtually ideal; rapid and prolonged in action, neither laxating nor constipating.

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To inhibit excess lysozyme, which is believed to be a factor in the aetiology of peptic ulcer.

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To ensure ingredients adhere to mucosal surfaces and to assist in protecting the ulcer crater.

"... may be safely tried out under G.P. conditions with every prospect of a good result..."
Medical World (1955) 82: 379

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Each tablet or 10 c.c.of Gel contains:

'Merbentyl' (diethylaminocarbethoxybicyclohexyl hydrochloride)	5 mg.
Dried Aluminium Hydroxide Gel	400 mg.
Heavy Magnesium Oxide	200 mg.
Sodium Lauryl Sulphate	25 mg.
Methylcellulose	100 mg.

Gel

Bottles of 12 fl. oz.

Tablets

Cartons of 48 and 240 tablets in roll packs of 12.

Dosage

1 to 2 tablets (2 to 4 teaspoonfuls of Gel) 3 or 4 times a day.

Merrell Research

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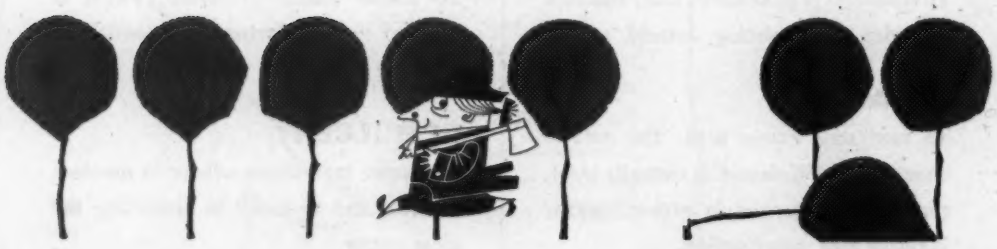
when regularity is disturbed

DULCOLAX, the new contact laxative, smoothly induces easy bowel movement overnight. Though colonic peristalsis is subject to individual variations, the well-being of many patients demands a regular daily bowel movement, and DULCOLAX will achieve this without side-effects or subsequent rebound constipation.



DULCOLAX is supplied in tablets which, if given in the evening, will bring about a soft easy motion about ten hours later or, alternatively, as suppositories which act within the hour.

OTHER INDICATIONS

Habitual constipation. Constipation due to the change of food or environment or after surgical procedure. Constipation caused by serious illness, fever, or circulatory diseases. Constipation associated with pregnancy. In hæmorrhoids to facilitate evacuation.

Dulcolax*

4,4' - Diacetoxy - diphenyl - pyridyl - 2 - methane

Manufactured and distributed in the U. K. by Pfizer Ltd., Folkestone, Kent, for

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Registered Proprietors of the Trade Mark. **Regd. Trade Mark*

Further refinements in the chemotherapy of tuberculosis

THERAPAS

(Calcium B-P.A.S.)

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('Therapas' and isoniazid)

If P.A.S. is indicated, THERAPAS may be used as the drug of choice because it has these significant properties.

★ No unpleasant taste
★ Overcomes the problems of nausea and vomiting
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★ Breaks down in the body to yield P.A.S.
★ Yields more prolonged blood levels of P.A.S. than an equivalent dosage of P.A.S.
★ Produces high urinary concentrations of P.A.S. and is the drug of choice in the management of genito-urinary tuberculosis.

THERAZID is a convenient and easy to take combination of 'Therapas' and 'Pycazide' (Smith & Nephew's name for isoniazid B.P.) For *domiciliary treatment* THERAZID is particularly valuable. Patients complaining of gastro-intestinal upset and monotony of dosage of P.A.S. and isoniazid therapy will be happier and more co-operative on THERAZID.

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British Medical Journal, July 2nd 1955

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Neither SOLPRIN nor CODIS is advertised to the public

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14/7

"... When all aloud the wind doth blow,
And coughing drowns the parson's saw,
And birds sit brooding in the snow
And Marion's nose looks red and raw ..."

Act V. Sc. II "Love's Labour's Lost" by
William Shakespeare.

Effective decongestant therapy.

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Over-digitalisation quickly subsides because of rapid excretion.

'LANOXIN' BRAND *for unfailing control*

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(cortisone Glaxo)
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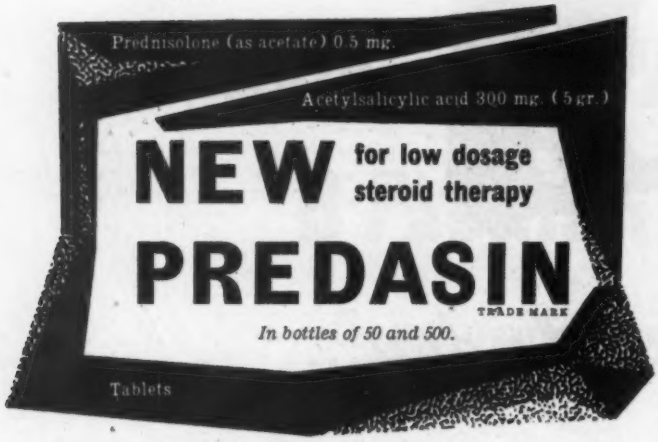

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With the low dosage of prednisolone contained in Predasin hormonal side effects are seldom, if ever, seen.

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*Also available with neomycin

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HARVEY AND HIS CONTEMPORARIES

The Harvelan Oration of 1957*

DONALD HUNTER
C.B.E., M.D. Lond., F.R.C.P.
PHYSICIAN TO THE LONDON HOSPITAL, LONDON, E.1

Harvey was born in the middle of the reign of Elizabeth I, served James I and Charles I as personal physician, found himself on the losing side in the Great Rebellion, and died at 79 years of age exactly three hundred years ago. The Tercentenary Congress held this summer in London was a Festival of Discovery, a symposium in the form of a review of the many notable advances which have made of the last forty years a rich harvest-time of cariovascular physiology. Harvey's great achievement was his study of flow in vessels, and it was therefore appropriate that he should have been commemorated by a symposium of the conquests of the cardiac catheter—that is, of the application of the advances in instrument technology to the basic phenomena outlined by his work.

In these circumstances it is, I hope, not amiss that I should endeavour to paint a picture of where the biological and allied sciences stood in his day, and what the world was like in which he lived. This serves the purpose of showing how his work towered above that of his contemporaries.

Canterbury, Cambridge, and Padua

Harvey was born in Folkestone, and because his father held the office there of jurat or alderman he must have shared as a boy of 10 the excitement which came with the defeat of the Armada; but unhappily no record of his childhood has survived. At the age of 10, following in Linacre's footsteps, he entered the already famous King's School, Canterbury. Christopher Marlowe had left the school only eight years before, and *Tamburlaine* was already published.

Evidently William made it plain that he wished to be a doctor, for at the age of 16 he was sent to Caius College, Cambridge, to take a degree in arts preparatory to the study of medicine. He entered as a commoner at his parents' expense. Matthew Parker, Archbishop of Canterbury, had given to Caius College the funds for a scholarship for a medical student. It was the first scholarship to be founded in England for the education of a student preparing for medicine. Shortly after Harvey went to Caius, this unique medical scholarship was awarded to him (Crowther 1957).

At the time neither the college nor the university was in a happy condition. Harvey's studies were mainly in classics and philosophy. He never referred to his time in Cambridge in any of his writings.

Because there were no adequate medical schools in England at that period, serious medical students went abroad for proper training. Harvey chose Padua. For him there was nothing strange in going abroad; his father had business with Italy nearly every day, and his cargoes were travelling continually to and from Venice and Constantinople. Young Harvey would have found his way to Padua more easily than most. He probably entered the university in 1598. In 1600 he became a member of the council of the English students who constituted a "nation": his stemma, painted in the aula of the university, commemorates this. Many times in his writings he refers to the happy days he spent in Padua, and there can be no doubt that the mainspring of his inspiration lay there. You will have visited the wooden anatomy theatre, now a museum piece, built in Padua by Harvey's teacher and friend Fabricius of Aquapendente.

It is not my purpose to relate in detail how Vesalius had laboured at Padua and how Fabricius had followed him. In his *De Venarum Ostiolis* (1598) Fabricius described the structure of the valves in the veins but failed to recognise their import.

Padua had been a centre of medical dialectics since the arrival in 1306 of Pietro d'Abano (1250–1315). He was one of the most eminent scholars of his day and of course his method of teaching was in the scholastic tradition. The schoolmen were satisfied that nearly everything that was worth knowing had been written in the old texts of Aristotle and Galen. In the Renaissance medicine of the 14th and early 15th centuries the Galenic doctrine, after translation and retranslation through Arabic, Syrian, and Hebrew glosses became badly distorted. The medical literature of that time was entirely passive, consisting of compilations, commentaries, glosses, glossaries, concordances, and consilia. And while Europe was engaged in these barren tasks the Church, to maintain its power, made it clear that all knowledge was the business of the religious houses and was sacrosanct and unimpeachable. It was sacrilege to impugn the authority of the priests, and to doubt, inquire, or criticise might entail serious pains and penalties.

A factor which tended to prevent change in the method of teaching was the scarcity of books. Even as late as 1395 the University of Paris possessed only six manuscript books on medicine. This is, of course, why it was necessary for students to travel long distances to attend universities, since lectures were almost the only means of transmitting knowledge.

And then in 1453 came the fall of Constantinople, releasing the original texts of Greek learning and causing the flight of Byzantine scholars to Italy.

Thomas Linacre and John Caius

Within a few years of this momentous event Thomas Linacre (1460–1524), a priest who had already graduated in medicine at Oxford, arrived in Padua to study in Italy for eight years. Born in Canterbury, he had obtained his first instructions in grammar at the school of the monastery of Christ Church, Canterbury, now the King's School, which still has a house called after him. Northern Italy had a profound influence on his mind. Both in Padua and Bologna the intellectual atmosphere was alive, and he saw men striving to climb the heights revealed by the revival of learning. Renowned as a scholar and a Hellenist, he has been called the intellectual grandfather of Harvey. His faithful and accurate Latin translations of the treatises of Galen had a wide circulation on the Continent and made it clear to physicians that men had for centuries relied upon garbled and second-hand versions of their favourite author. But to Linacre belongs a greater glory than that of medical philologist—namely that, developing an idea based directly on what he had seen in Italy, he founded the College of Physicians and became its first president.

If Linacre was Harvey's intellectual grandfather, then John Caius (1510–73) may be called his father. In 1539 Caius set out for Italy and studied physic at Padua under the great teacher John Baptist Montanus. Whilst at Padua he lodged in the same house with Vesalius, and pursued his anatomical studies with an ardour equal to that of his companion (Munk 1878). Back in England he refounded Gonville College, Cambridge, on the inspiration of his Italian travels. Between 1555 and 1571 he was three times president of the College of Physicians.

Today we pay homage to the scholar-physicians Linacre and Caius for their great work in helping to provide a corporate cultural background for the development of science and medicine in the 17th century. What they did served to bridge the period between the end of the influence of the Middle Ages and the beginning of

* Delivered on St. Luke's Day, Oct. 18, before the Royal College of Physicians of London.

sound scientific medicine. For an important effect of the revival of Greek culture was to recapture the spontaneous receptive attitude of Plato and Hippocrates and substitute it for the dialectics of the exponents of Aristotle and Galen. Caius died five years before Harvey was born; but Harvey came under his posthumous influence at Cambridge.

The Backward State of Botany

The 17th century witnessed many discoveries in mathematics and astrophysics. Following the work of Copernicus on the revolution of the planets around the sun (1543), Galileo had invented the telescope (1609), Kepler had stated the laws governing planetary motion (1618) and Newton the law of gravitation (1682). Logarithms were invented by Napier (1614) and Briggs (1617), Descartes founded analytic geometry (1637), while von Guericke invented the air-pump (1641), Torricelli the barometer (1643), and Hooke a compound microscope (1665).

Compared to this astonishing rate of progress, most branches of biology remained dormant. As to botany nobody thought in terms of function. If a herb could be classified and cultivated, and its medical performance assessed, the Renaissance botanists were well satisfied; but their knowledge of plant anatomy and physiology stood virtually where Theophrastus had left it two thousand years earlier.

A remarkable Renaissance figure was the great Swiss naturalist Conrad Gesner (1516–65).

The son of a poor furrier and in great want in his early days he graduated in medicine in Basle in 1541. He was a man of extraordinary industry and was much respected on account of his equal attainment in botany, zoology, bibliography, and general erudition. He was at length appointed professor of natural history at Zürich (1555) and ten years later died of the plague. The five folio volumes of his great *Historiæ Animalium* are really separate works on different animal groups including snakes. Some of his figures of animals and fishes have great freshness and vigour. These volumes comprising 4500 folio pages and nearly 1000 woodcuts became one of the starting-points of modern zoology. His most important botanical works were not published until two hundred years after his death.

An important point about Gesner's work is that he found and identified in his own country the plants and animals mentioned by classical authors; and out of this he developed an interest in local fauna and flora for their own sake. It was soon realised that there were other creatures in existence besides those known to the ancients. The classical limitations were finally shown up by the new fauna, flora, foods, and drugs coming to Europe from the New World and the East. Plants and animals were then described and drawn in their own right and called by their common vernacular names to a large extent without reference to the classics (Crombie 1952).

In Britain the new movement in natural history really began with William Turner (1510–68), physician and cleric, and father of British botany.

He was the son of a tanner in Morpeth and studied medicine in Cambridge. In 1551 he published *A New Herball* in which he broke away from superstition and described plants from his own observations and experience.

John Gerard (1545–1612), an older contemporary of Harvey, published in 1597 his *Herball* or *Generall Historie of Plantes*.

This book, although by no means original, is probably the most widely known botanical work ever published in Britain. It epitomises Elizabethan botany and has charmed generations with its poetical descriptions of plants and their medicinal virtues. Gerard was a successful barber surgeon and became master of his company in 1607. In his garden near the Fleet River in the pleasant suburb of Holborn, he cultivated over a thousand different species of plants. From here he botanised extensively in North London and further afield in Middlesex.

John Parkinson (1567–1650), apothecary to James I, wrote the *Theatrum Botanicum* which aimed at giving a complete account of the plant kingdom. He also wrote the first work on horticulture in Britain and dedicated it to Queen Henrietta Maria. After the death of Parkinson England for a time produced no botanist of European reputation. Nevertheless, the ponderous folios of the Elizabethan and early Stuart botanists provide a fascinating record of contemporary medical and horticultural practice and of the beginnings of our knowledge of the native British flora.

Thomas Johnson (1604–44) was a herbalist who practised on Snow Hill, London, and conducted botanical tours in Kent and on Hampstead Heath. We have seen that Gesner had already explored Switzerland on these lines, but for England such journeys opened a new chapter in botany—the study of the native flora for its own sake rather than as a handmaid of medicine. Johnson made his last such journey in 1641, for in the following year he joined the forces of Charles I and in 1644 at the age of 40 he was killed while fighting for the Royalists during the siege of Basing House.

The man who began to put some rational order into this mass of empirical knowledge was Andrea Cesalpini (1519–1603) of Pisa. He brought to the study of botany not only the floristic knowedge of the herbalists but also an interest in the detailed morphology of plants.

In *De Plantis* (1583) he held, like Aristotle, that the centre of vital heat, corresponding to the heart in animals, was the pith, and in addition he thought that this produced the seeds. The cooperation of the male and female parts of flowers in reproduction had not at that time been discovered. Plants with obvious seeds he classified according to the number, position, and shape of the parts of the fruit, with subdivisions based on root, stem, and leaf. Characteristics such as colour, odour, taste, or medicinal properties he considered to be mere accidents.

But botanists were not yet ready to follow this lead, and it was only at the end of the 17th century that they once more recognised the need for a natural system of classification and attempted to base it on comparative morphology. The culmination of their effort was the system of Linnæus (1707-78), who ackowledged his debt to Cesalpinus (Crombie 1952).

Birth of Academic Botany in England

The appointment of Robert Morison (1620–83) as professor of botany in Oxford in 1669 marks the birth of academic botany in England. Oxford and Cambridge did little or nothing to encourage the development of the sciences during the 16th and 17th centuries, and botany was no exception. The medical school of Padua had planted a botanical garden in 1545. A drowsy Oxford founded a university botanic garden in 1621; in London the Society of Apothecaries slept until about 1673, when they founded the garden at Chelsea; whereas Cambridge remained in deep coma until they founded a botanic garden in 1759!

Morison spent his life in the atmosphere of the court and the country seat. After being severely wounded fighting for the Royalists at the Battle of the Brig of Dee in 1644, he fled to France. Later he was recalled to England by Charles II who restored to him the Oxford chair and appointed him King's physician. In 1683 while crossing a London street he was knocked down by a coach and died the following day (Gilmour 1946).

The modest English naturalist, John Ray (1627–1705), was the son of a blacksmith. In addition to botany he wrote important works on birds and animals and made the first classification of animal types based primarily upon the toes and teeth.

His huge *Historia Plantarum Generalis* (1686–1704) contains in three volumes a most able account of everything then known of the structure, physiology, distribution and habits of some 18,600 plants. He arranged the species in 125 sections of which a number are still recognised as Natural Orders. In addition to this, his *Methodus Plantarum Nova* (1682) uses the now familiar division of flowering plants into dicotyledons and monocotyledons.

Ray's introduction to his *Historia* shows that he was by no

means a systematist only, though classification was always his chief interest. In 1669, he carried out experiments on the movement of sap in trees, foreshadowing the work of Stephen Hales in the following century. Further, with Nehemiah Grew, he played an important part in showing that plants possess sex organs (Raven 1942). This had been known to Theophrastus and Dioscorides although they had but the vaguest idea of the mechanisms involved.

Nehemiah Grew (1641–1712) was educated at Cambridge and Leyden, practised medicine in London, and was one of the early fellows of the Royal Society, of which he became secretary in 1677. He was for ever looking for animal analogies in plants. The most striking of all his contributions is his guess that flowers are the sexual organs of plants. In fact, he saw the grains of pollen and recognised that bees gather them and carry them upon their thighs.

But in late Stuart times, although the invention of the microscope had given new impetus to the study of plant anatomy, botanists still neglected the experimental method. The publication in 1628 of Harvey's *De Motu Cordis* wakened a great interest in animal structure and physiology, and it was natural that scientists should begin to look for corresponding tissues and processes in plants. This jump from animal to vegetable was made simultaneously and independently about 1664 by two men—Nehemiah Grew in Coventry, and Marcello Malpighi in Messina. Nevertheless the botanists were a hundred years behind Harvey in their ideas, for it was not until Stephen Hales published his *Vegetable Staticks* in 1727 that men began to think seriously of plants in terms of function. The experimental method in plant physiology was born in the Teddington garden where Hales established that root pressure, transpiration, and capillarity all play a part in the upward movement of the sap. As to plant respiration, like Harvey, he was handicapped by ignorance of the composition of the atmosphere. It was not until 1774, thirteen years after the death of Stephen Hales, that Joseph Priestley (1733–1804) discovered oxygen.

Thomas Muffet, the Father of Entomology

The beginnings of the science of entomology were laid down in Harvey's time and the best work of all on the subject was done by Englishmen, many of them fellows of the College of Physicians.

Thomas Penny (? 1530–89) was a man of great attainments in the natural history of his time. He had searched England for rare plants and was one of the first to study insects. He left behind him certain entomological collections which, with those of his friends Edward Wotton and Conrad Gesner, formed the basis of Muffet's *Theatrum Insectorum*.

Edward Wotton (1492–1555) was born in Oxford and took the degree of doctor of physic at Padua. Later he was admitted a fellow of the College and was appointed physician to Henry VIII. He served all the offices in the college and was president from 1541 to 1543. He seems to have been the first of our English physicians who particularly applied themselves to the study of natural history, and he became famous by writing a work on this subject entitled *De Differentiis Animalium*.

Included among the encyclopædic naturalists is Thomas Muffet (1553–1604).

He was born in London, probably in Shoreditch, and was educated at Merchant Taylors' School and Trinity College, Cambridge. He visited Italy, Spain, Denmark, Germany, and Switzerland and became M.D. Basle in 1578. He became a fellow and censor of the College in 1588 and practised in London. He spent the latter part of his life in Wilton which he represented in Parliament in 1596.

In 1590 Muffet enlarged and finished the *Insectorum sive Minimosum Animalium Theatrum*, partly based on the entomological collections of his friends Edward Wotton, Conrad Gesner, and Thomas Penny. At his death he left the book in manuscript form and it came some years afterwards into the hands of Sir Theodore de Mayerne who published it in London in 1634 (Munk 1878). This work showed a new standard of exactness in the study of invertebrate animals, for Muffet was an accomplished draughtsman and during his travels had kept copious illustrated notes of his observations. But when he came to classify the whole of the collections of his friends, together with his own specimens from many countries, and still other insects which were sent him from abroad, he was at his wits' end for descriptive terms. His description of grasshoppers and locusts runs thus:

"For who first of all is able to describe so many colours in one body? who is able to set forth so many divers shapes of bodies, goings, leapings, flyings. For some there are green, some black, some blue, some one part of them of this colour, on the other of another. There are those which are of another colour in their flight, than they seemed to be of before. There are some fly with one pair of wings, others with more; those that have no wings they leap, those that cannot either fly or leap, they walk; some have longer shanks, some shorter, and amongst these some have more and shorter joynts, some fewer and longer, some there are that sing, others are silent, as the *Seriphiæ*: some do no harm at all to tillage, so that children may take them up in their hands without hurt: others on the contrary are the pest and destruction of all that up growes through a whole Countrey. And as there are many kindes of them in nature, so their names were almost infinite, which through the neglect of Naturalists are grown out of use. Now all Locusts are either winged or without wings. Of the winged, some are more common and ordinary, some more rare; of the common sort, we have seen six kindes all green, and the lesser of many colours." (Muffet 1634)

The admiration of Thomas Muffet for spiders, and his aptitude to write verse, have led to the entertaining speculation that his daughter, Patience, was the Miss Muffet of the famous nursery rhyme (Bristowe 1947). But rhymes with this same theme date back to heathen times. Besides, no record of the epigram has been found earlier than 1805, and it therefore seems unlikely that the daughter of a censor of the College gave her name to the rhyme.

Harvey did a great deal of work investigating insect life. In 1639 he was appointed senior physician-in-ordinary to the King, an office which carried with it a lodging in Whitehall. Within three years the Great Rebellion broke out and brought personal tragedy to him, for his apartments were raided by agents of the Parliament, who destroyed his belongings including his manuscripts and preparations.

"I remember," writes Aubrey, "I have heard him say he wrote a booke *De Insectis*, which he had been many yeares about, and had made curious researches and anatomical observations on them. This booke was lost when his lodgings at Whytehall were plundered in the time of the rebellion. He could never for love nor money retrieve them or heare what became of them and said 'twas the greatest crucifying to him that ever he had in all his life."

Harvey describes the event in milder terms.

"Certain rapacious hands not only stripped my house of all its furniture, but what is subject of far greater regret to me, my enemies abstracted from my museum the fruits of many years of toil. Whence it has come to pass that many observations, particularly on the generation of insects, have perished, with detriment, I venture to say, to the republic of letters. Let gentle minds forgive me, if recalling the irreparable injuries I have suffered, I here give vent to a sigh."

But for this tragedy Harvey might well have supplemented the pioneer work of Muffet on entomology; and who can say what heights he may not have reached?

The Primitive Knowledge of Chemistry

Harvey adopted an attitude to chemistry which was altogether too scornful, and it seems that he could not get over his dislike for alchemists and the nonsensical claims they made. "He did not care for chemistrey and was wont to speake against them with an under value," writes Aubrey in his *Brief Lives*.

Although in the 14th century the pretended making of gold and silver and other magic practices were opposed by the Church in Papal bulls, alchemy was to rise in the three following centuries to a cult of great magnitude. It appealed to the lust for money, the love of life, and the corresponding fear of death; for the philosophers' stone was not only supposed to transmute the baser metals into gold, and create precious stones and a universal solvent, but also it conferred perfect health and long life. However, we must remember that in empirical matters, especially in mining, smelting, dyeing, and tanning, chemistry achieved a certain measure of practical success.

A new direction was given to chemistry by Paracelsus (1493–1541), a Swiss variously described as a genius and as a charlatan, whose real name was Philip Aureolus Theophrastus Bombast von Hohenheim.

His writings were wrapped in verbiage and mysticism, and he introduced the strangest doctrines, believing all matter to be animated by spirits, sylphs, pixies, and salamanders, which inhabited air, water, earth, and fire respectively. His chief distinction was that he urged the value of mineral substances as medicines and directed the attention of chemists to other ends than the preparation of gold.

Jean Baptiste van Helmont (1577–1644), a contemporary of Harvey, came nearer to the type of the modern chemist; for, though superstitious and credulous, he was a man of true experimental spirit. He is perhaps most to be remembered for his invention of the word gas, and his study of certain gases, notably carbon dioxide. He recognised the existence of gases different from air, and realised that the gas found in old wells and caverns was identical with that formed by fermentation and by the action of acids upon calcareous rocks.

Uncritical Acceptance of Dragons and Their Blood

But most chemists in Harvey's time ingenuously accepted all sorts of nonsensical stories from the past and sometimes from countries abroad which they had never visited. Thus Count Michael Maier, physician to the Emperor Rudolph II at Prague, published in 1618 his *Viatorium* on the origin of Dragon's Blood. He reproduced from Pliny's *Natural History*, without acknowledgment, the story of the dragon waylaying the elephant, coiling itself around its limbs, and sucking its blood until it was exhausted, both animals then falling to the ground, the dead elephant finally crushing the dragon—thus spilling the blood of both. The product known as Dragon's Blood was in fact a deep red resin from the so-called dragon tree *Calamus draco* of the East Indies.

Richard Hakluyt (1588) tells a similar story and warns that the congealed blood which the apothecaries call Sanguis Draconis is also known as cinnabaris and must not be mistaken for vermilion used by painters. Now, of course, vermilion or cinnabar is the red sulphide of mercury—a mineral substance known and used since remote times. It is therefore clear that medical men, chemists, apothecaries, and geographers in Harvey's time were so lacking in common sense and so sublimely uncritical that they confused a red inorganic pigment from the mercury mines, a red resin from a tropical tree, and a mythical blood-clot which concerned a dragon that no man had ever seen.

Johann Rudolph Glauber (1604–71), another contemporary of Harvey, made copper sulphate, arsenic chloride, and zinc chloride, obtained hydrochloric acid by distilling sulphuric acid with sea salt, and distilled ammonia from bones. He published a useful encyclopædia of chemical procedures and did much for the chemistry of wines and spirits.

In his *Miraculum Mundi* (1648) he shows his keen observation and practical ability by describing the destructive distillation of wood and coal and the use of the resulting tar both to preserve wood from rotting and to kill insects climbing tree-trunks. He explains that if hempen cords soaked in this oil are bound about fruit-trees "it will hinder the creeping up of spiders, ants and other the like insects, which are wont to damnifie fruit; inasmuch as those insects plainly abhor such hot oils."

In spite of this, his writings are full of superstitions and of meaningless wordy disquisitions.

When he discovered sodium sulphate (Glauber's salt) he became obsessed by the imaginary virtues in alchemy and medicine which it possessed. One of his fantastic notions about it was that dogs, cats, mice and insects, drowned in water, "by help of it may again be restored to life." He often sold secrets to manufacturers, and he was accused of selling the same secret several times, and of selling secrets which did not work. But the secretive Glauber was never a more complete alchemist than when he expressly declined to sell or publish his supreme secret which was the Alkahest or Universal Solvent.

Nevertheless we must remember that he was easily the greatest analytic chemist of his time and made many additions to empirical knowledge that proved to be of lasting value.

Alum in Dyeing

In his duties at the College of Physicians Harvey became interested in an alum works in Aldgate. The empirical use of alum in the preparation of leather and in dyeing was discovered very early in man's history.

The *Iliad* describes the preparation of leather, and leather of the period of Homer has been proved to contain a good deal of aluminium. The first written reference to alum is in the Ebers Papyrus and this suggests that it has been in continuous use for roughly four thousand years. It was valued as a mordant in dyeing, but when used for this purpose it must be of high purity. Since much of the natural mineral contains traces of iron which would stain any fabric dipped in it, we may suppose that the Egyptians were familiar with the process of recrystallising alum from water in order to purify it.

In the 15th century there was a large Turkish Mediterranean trade in dyed fabrics and wool in which alum was employed as a mordant. At the fall of Constantinople in 1453, Giovanni di Castro, who had made a fortune by dyeing Italian cloth using Turkish alum as a mordant, fled to Italy. He discovered alum on Papal territory at Tolfa where there is a local deposit of alunite or alum stone which has remained in use to within the present century. It is insoluble in water, but on calcination it gives a residuum of alumina, mixed with ferric oxide as impurity, and potash alum passes into solution when the mass is digested with water. Alum prepared in this way is called Roman alum and it is handled in commerce crystallised in cubes.

Pope Pius II monopolised the trade in alum and made any interference with it a sin punishable by excommunication. His works employed 8000 men, and they produced for him an annual revenue of 100,000 gold florins.

It is reputed that in England the manufacture of alum was first established in Harvey's lifetime by Sir Thomas Chaloner (1561–1615) on his estate at Longhull in Yorkshire. The ruins of many of the works he built are still to be seen in the neighbourhood of Whitby and Guisborough.

It is said that when Sir Thomas Chaloner was travelling in Italy he was struck by the resemblance of the soil about the Papal alum works at Tolfa to the soil of Guisborough, and also by the fact that in both places the leaves of the trees were of a special pale-green colour. On his return to England about the year 1600 he began works here, but in order to learn the secrets of the industry he had to bribe some of the Pope's workmen to enter his service, and he smuggled them out of Italy hidden in barrels on board his ship. For this it is said that Sir Thomas Chaloner was solemnly cursed by the Pope (Bett 1950). But the manufacture extended considerably and the method continued largely unchanged until the middle of the 19th century.

In 1627 "a complaint was brought full cry to the Privy Council at Whytehall against the farmers of an alum works at St. Butolph's, Aldgate, on account of the loathsome vapour from these works to the great annoyance of the inhabitants within a mile compass, tainting the pasture and poisoning the very fish in the Thames." This was referred to the College of Physicians and a committee which included Harvey was appointed to investigate the

nuisance. A visit was made to the works on July 23, 1627; but unhappily no details of the conditions found there were recorded. Promptly the college replied that the works must necessarily breed great annoyance to the nearer inhabitants, so endangering their health that it should be condemned.

Universal Curiosity of Harvey

Another facet of Harvey's character is the great curiosity he displayed when he travelled abroad. He covered great distances, often in considerable discomfort. In 1636 Thomas Howard, second Earl of Arundel, left England to go on a special mission to the Emperor Ferdinand II in Vienna, and Harvey accompanied the party. At Cologne the Earl visited the Jesuit College and there found "in the College honest little Doctor Harvey, who means to convert them."

The German people were decimated and torn asunder in the Thirty Years' War (1618–48), for it led to the destruction of their towns and farms, the spread of lawlessness, disease, and starvation, and the practice of sexual atrocities by the soldiery. Between Mainz and Frankfurt the Ambassador's party was made anxious by the action of freebooters in the region, who, writes Coryat,

"are such cruel and bloody horseleaches that they seldom robbe any man but forthwith they cut his throat. And some of them do afterwards escape by reason of the woode nere at hand."

William Hollar the artist reports that

"Dr. Harvey would still be making observations of strange trees and plants, earths, etc., and sometimes he was like to be lost, so that my Lord Ambassador would be really angry with him, for there was not only a danger of thieves but also wild beasts."

Quite undaunted, Harvey travelled East from Vienna, reaching the very edge of the Ottoman Empire to visit the silver mines of the King of Hungary. No wonder the Earl of Arundel described him as "that little perpetual movement called Dr. Harvey."

Respiration a Mystery

In *De Motu Cordis* we find Harvey still accepting the old doctrine that the function of the air in the lungs is to cool down the heart which produced heat. Later he seemed to have a glimpse of a truth partly explained by his younger contemporaries Boyle, Hooke, and Mayow, but fully understood only later when Priestley discovered oxygen and Lavoisier showed that respiration involved a process of the same nature as combustion. Discussing the need of the newborn infant for air when once it has breathed, "it is," writes Harvey, "as if the heat were rather enkindled within the fœtus than repressed by the influence of air." He recognised that this was a matter raising the greatest difficulties. It was indeed no more than an inspired guess, but it serves to show the imaginative genius of the man.

Meanwhile, lacking a knowledge of the true meaning of respiration, what did the people of the 17th century provide instead? Since the Middle Ages the subject of the effects of noxious gases in mines had been shrouded in superstitions of the most primitive character (Rosen 1943).

When men in mines, caves, wells, or subterranean passages died from exposure to an atmosphere almost entirely devoid of oxygen it was thought that subterranean demons had extinguished their lamps and destroyed them by the blast of their breath. In Harvey's day it was not considered unnatural for miners to come across demons in the mine workings. These were usually considered to be jolly and of kindly intent rather than cruel or evil. They were either little boys or dwarfed men, and they did little harm beyond chattering. Agricola wrote of them in his *De Animantibus Subterraneis* and told how demons of ferocious aspect were expelled and put to flight by prayer and fasting.

Gilbert, the Father of Magnetism and Electricity

The life and work of William Gilbert (1544–1603) illustrates how popular magic, the legacy of paganism, persisted despite the progress of scientific discovery. Gilbert was born in Colchester, educated at Colchester School, entered St. John's College, Cambridge, in 1558 and graduated M.D. in 1569. He travelled in Europe and in 1573 settled in London where he became president of the College of Physicians and physician to Elizabeth I and James I. He made use of these successes to provide himself with the money to engage in certain scientific activities which interested him. He was a friend of Sir Francis Drake and as a result took up the study of the mariner's compass. Since the 12th century such compasses had been made by rubbing a needle with a lodestone and floating it on water by means of a thin strip of wood. The action of the compass was but little understood. Columbus and John Cabot had noticed that in mid-Atlantic the compass needle appeared to be unreliable as a means of indicating the true North. The 17th century opened with the publication of Gilbert's remarkable book, *De Magnete* (1600). This work which embodied the results of many years research was distinguished by its strict adherence to the scientific method of investigation by experiment.

Gilbert's discussions with Drake and other sailors led him to believe that all the observed phenomena could be explained on the assumption that the earth itself was behaving as a giant magnet. The discovery by which he proved his theory was comparatively simple. He obtained an unmagnetised bar of iron and, having placed it in the North-South position, proceeded to hammer it gently. He found that such a bar would become magnetised by the influence of the earth's magnetic field.

De Magnete ranks beside Newton's *Principia* in that it disproved superstitions attributing the deflection of the compass needle to magnetic influences from the stars and the belief of sailors that garlic destroys the power of a magnet. The proposition put forward by Gilbert was the starting-point of all subsequent work on terrestrial magnetic variations, magnetic storms, and the charting of the Earth's magnetic fields. Gilbert's book contains references to the properties of amber. It had been known for many centuries that a piece of amber rubbed with a dry cloth would attract small pieces of paper and straw. The Greeks called amber *elektron*, and Gilbert named the property possessed by amber when rubbed *electricitas*. Gilbert was the father of the twin sciences of magnetism and electricity, and it was by the perusal of his book that Galileo, who greatly admired him, was induced to turn his mind to magnetism. By his will Gilbert gave his whole library, globes, mathematical instruments, and a cabinet of minerals to the College, but with the exception of a few folios which cannot now be identified with certainty, these appear to have perished in the first Great Fire of London, 1666.

Belief in the Supernatural

We must remember that when Harvey lived, in spite of the serenity of Shakespeare and the lusty joie-de-vivre of Rubens and Frans Hals, the spirit of the times was sombre because Europe was dominated by famine, plague, and war. The mortality from wars and epidemic diseases was as great as in the Middle Ages. Smallpox was pandemic in Europe in 1614. The rejoicing in London for the accession of James I was cut short by an outbreak of bubonic plague which killed 30,000 people; the accession of Charles I was the signal for another no less destructive. In 1636 a slighter attack occurred. All these outbreaks must have been known to Harvey, but he did not survive to witness the Great Plague of London which in 1665 killed 69,000 people.

Typhus and typhoid fevers as well as dysentery were epidemic throughout the countries ravaged by the Thirty Years' War—notably Germany, Holland and France—and scurvy occurred at the siege of Breda (1625), at Nuremberg (1631), and at Augsburg (1632). A superstitious populace still regarded comets with awe. They were sent by God as harbingers of war, pestilence, or famine, or as warnings of impend-

ing doom to famous men. The appearance of Halley's comet in 1682 was distinguished by the great English astronomer's calculation that it would reappear in 1758. With the verification of this prediction the comet theory of disease disappeared for good; it was perceived that comets are after all just as natural as any other periodic phenomenon in Nature.

Beliefs in disease-causing spirits, evil eye, and magical remedies are of course recorded by 17th-century writers. Books such as the *Malleus Maleficarum* (1489) were written as guides to the discovery, examination, torture, trial, and execution of witches. Henry VIII and Elizabeth I enacted laws making witchcraft a felony, and supposed witches were still captured and often hanged. In his book *The Displaying of Supposed Witchcraft* (1677) John Webster was at great pains to refute the witch-belief and to stress the likelihood of pretended sorcery among the nefarious practices of wicked persons, so called. He gave an account of the discovery of a large number of witches in Lancashire, especially in Pendle Forest in 1634. This account is of particular interest to us because Harvey was responsible for appointing surgeons and midwives to examine the three prisoners who had been brought up to London for trial to determine whether they bore any of the recognised stigmata of witches. Harvey reported that these women were in all respects normal—an act of considerable courage in the circumstances. Sometimes scientists made themselves liable to the accusation of witchcraft; David Gregory, brother of James Gregory who invented the reflecting telescope, was accused of witchcraft because he used the barometer to forecast the weather.

The White Dolomite Buildings of Inigo Jones

Let us now consider what sort of buildings were put up in the London of Harvey's day. Inigo Jones (1573–1651) was the first of our great architects of the Renaissance movement.

Born in London he was the son of a clothworker and lived near Ludgate, being both a friend and a neighbour of Harvey. He studied architecture in Venice and became interested especially in the style of Palladio; he acquired such a reputation that in 1604 he was invited by Christian IV to Denmark where he is said to have designed the royal palace of Frederiksborg. In the following year he accompanied Anne of Denmark to the court of James I of England, and the King later appointed him Surveyor General of Royal Buildings. The dignified simplicity of his work in Portland stone in the Queen's House, Greenwich (1617–35) is today still a delight.

He prepared designs for a new palace at Whitehall and built in Portland stone the lovely banqueting-hall (1619–22) which remains to the present day a monument alike to the genius of the architect and to the lavish expenditure of the Stuart court. The ceiling is adorned with paintings by Rubens, and there were plans for the rest of the hall to be decorated by Van Dyck, though the work was never completed. The construction of the new palace never went beyond the banqueting-hall, though it was intended to include a galaxy of buildings reaching to the North bank of the Thames over a long distance.

In 1620 Inigo Jones was employed by the King to investigate the origin of Stonehenge, when he came to the absurd conclusion that it had been a Roman temple. That Harvey was concerned with topics of general cultural interest is shown by the fact that he urged his friend to publish this work and it appeared as his *Stonehenge Restored* (1655).

Inigo Jones was responsible for introducing brick and stone as building materials to London and exploited the use of the beautiful white dolomite from Portland Bill. A generation later Christopher Wren took up the fashion of building in white dolomite, and vast new quarries were opened up, giving a new life to the Portland peninsula. Roads and piers were built so that the stone could be fetched by sea and landed by way of the Thames. In rebuilding St. Paul's and the eighty-nine churches destroyed in the first Great Fire of London (1666) Wren quickly stamped his genius on the ecclesiastical architecture of the new city. In our time the facings of a new Waterloo Bridge have been fashioned in Portland stone. It is of interest that an architectural style set up in Stuart times not only continues to beautify London but also has been the means of saving hundreds of stonemasons from the risk of silicosis.

The Fascination of Harvey, the Man

Few scientific writers are more self-revealing than Harvey. To read his works is to be conscious of companionship with a man of dynamic personality. One of his outstanding characteristics was his love of truth, "I avow myself the partisan of truth alone"; or again, "my trust is in my love of truth." His attitude to every problem was that of a rigid refusal to be trammelled by tradition. He opposed blind submission to current theory and authority. Rather he put his faith in patient observation and in lucid thinking. His point of view is well expressed in the following words:

> "I propose to learn and to teach anatomy not from books but from dissection, not from the positions of philosophers but from the fabric of Nature."

And there is a modern flavour about this sentence:

> "The method of investigating truth commonly pursued at this time, therefore, is to be held erroneous and almost foolish, in which so many enquire what *others have said* and omit to ask whether the things themselves be actually so or not."

Aubrey says, "He was not tall; but of the lowest stature, round faced, olivaster complexion; little eie, round, very black, full of spirit; his haire was black as a raven, but quite white 20 yeares before he dyed. He was, as all the rest of the brothers, very cholerique; and in his young days wore a dagger, but this Doctor would be too apt to draw out his dagger upon every slight occasion." Evidently he did this, not in an offensive spirit, but as a gesticulation arising out of his natural liveliness. The records of his private life, of his tastes and interests, are unfortunately scanty; a few letters, his will, and occasional references in the writings of his friends are all we have; but they suffice to give us some idea of the man. He may have been impatient with fools but it is clear that he was a quiet, gentle, good-tempered man. Often he would meet an argument with a dissection or an experiment. He preferred a demonstration to a discussion. In written controversy he was always courteous, and the perfect manners of the style he used are all the more remarkable against the contentious background of the age in which he lived. He sums up his attitude, when attacked, in the following words:

> "To return evil speaking with evil speaking, however, I hold to be unworthy in a philosopher and searcher after truth: I believe that I shall do better and more advisedly if I meet so many indications of ill-breeding with the light of faithful and conclusive observation."

We may attribute some share in this tolerant attitude to the united family that formed the background of his early life. Indeed he and his brothers constantly obeyed the request in their father's will to live in unity and mutual help.

In Harvey's later years, childless, and having lost his wife, and being much affected by gout, he lived with one or other of his devoted brothers and, with age, developed some curious eccentricities: but his mental power was undiminished and we can picture the small white-haired man living a sheltered, carefree life, walking in the fields, meditating, or reading in some secluded corner on the leads of his brother's house. His devoted pupil, Dr. George Ent, who later became president of the College of Physicians and was knighted, visited him when he was 72 and wrote the following description:

> "I found him, Democritus like, busy with the study of natural things, his countenance cheerful, his mind serene, embracing all within its sphere. I forthwith saluted him and asked if all were well with him. 'How can it be,' said he, 'whilst the commonwealth is full of distractions and I myself am still in the open sea? And truly,' he continued, 'did I not find solace in my studies, and a balm for my spirit in the memory of my observations of former years I should have

little desire for longer life. But so it has been, that this life of obscurity, this vacation from public business, which causes tedium and disgust to so many, has proved a sovereign remedy to me.' "

Harvey showed moral courage, patience, and reflectiveness. His attack on the stronghold of Galen was a stupendous act of courage. Only forth-three years before he qualified in medicine—namely, in 1559—John Geynes was cited for impugning the infallibility of Galen in the College. Not until he had humbly recanted was he admitted to fellowship in the following year.

Harvey's patience was shown in the way he arranged his innumerable experiments beginning with cold-blooded creatures because in them the movements of the slowly beating heart were more easily followed. Altogether he dissected about sixty-four fishes and birds (Cole 1957), thereby joining hands with his teacher Fabricius in creating the science of comparative anatomy. His lecture notes from 1616 onwards admit of no conclusion but that he was the pioneer of the experimental method in biology. To him the animal was a machine, and he wanted to know how it worked. Hence we see him studying the structure and movements of the heart from the simplest to the most complex of living organisms and finally reaching the conclusion to which his experiments directed him. His patience was shown not only in the carrying out of his investigations but in his reluctance to make them public, for he waited twelve years after the Lumleian lecture in April, 1616, when he first described the passage of blood in a circle, before he published *De Motu Cordis* (1628). Other great men, including Galileo, Bacon, Newton, Cavendish, and Darwin also were reluctant to publish their work.

It was Harvey's delight to make himself inconspicuous and to retire into quiet places such as caves in his garden in order to indulge in contemplation. The more we know about the man the more we find ourselves expressing true and unconditional admiration for him and his work.

Harvey's Work in Embryology

In Padua Harvey had followed the work of Fabricius in reviving the study of embryology. He had assisted him in his descriptions of the formation of the chick within the egg. Later on in London and in Oxford, as a true disciple of Fabricius, he continued this work and traced the development of the embryo in more than sixty animals, including sheep, dogs, deer, cats, cassowaries, ostriches, snakes, fishes, shrimps, wasps, and lice. We must admit that his influence on embryology was in certain respects reactionary. In his *De Generatione Animalium* (1651) he neither broke with Aristotelianism nor did he relax his opposition to *chymistry*. But these failings are far outweighed by his positive contributions. It must be remembered that he had no compound microscope and had to rely on simple lenses of very low power. He settled for good the controversy which had lasted for more than two thousand years as to which part of the egg was nutritive and which was formative, by demonstrating the unreality of the distinction. He set his predecessors right on a very large number of detailed points such as the nature of the placenta, and he identified definitely and finally the cicatricula on the yolk-membrane as the spot from which the embryo originated. He affirmed that embryonic organs were active and that the embryo did not depend on external aid for its principal physiological functions. He denied the possibility of generation from excrement and from mud, saying that even vermiparous animals had eggs.

"We shall show," he writes, "that many animals themselves, especially insects do germinate and spring from seeds and principles not to be discerned even by the eye, by reason of their contract invisible dimensions (like those atomes, that fly in the aire) which are scattered and dispersed up and down by the winds; all which are esteemed to be spontaneous issues, or born of putrefaction, because their seed is not anywhere seen."

The epigram *omne vivum ex ovo* generally attributed to Harvey, though not actually found in his writings, expresses the first major advance in embryology since Aristotle.

In 1667 Nicholas Stensen, that great Danish anatomist, later a bishop, published his *Elementorum Myologiæ Specimen*, in which he described the female genital organs of dogfishes. He demonstrated eggs in them and affirmed that the *testis* of women ought to be regarded as exactly the same organ as the *ovary* or *roe* of ovipara. At the time he carried the suggestion no further, but it was a fruitful one, and it is surprising that it did not create more interest, for it was exactly what Harvey had been looking for. Nothing obvious having been found in the uteri of King Charles' does, and the conviction yet being strong that viviparous conceptions really came from eggs, Stensen's minute ova supplied the fitting answer to the question. Thus Harvey and Stensen between them substituted the modern knowledge of mammalian ova for the ancient theory of the coagulum all in the space of fourteen years (Needham 1931).

Father of Experimental Medicine

In Harvey's work we can see the true beginning of experimental medicine. No man with his passion for inquiry and with his faculty for patient and precise observation could have failed to accumulate material of great interest and significance in his practice as a doctor. In the first pamphlet he addressed to Riolan in defence of the circulation, published in 1649, he still speaks of his intention of publishing his *Medical Anatomy*, which from his description of its contents might have made him the first of our morbid anatomists. Elsewhere, in the essay on parturition, which is richer than most of his writings in clinical records, he refers to one case as introduced from his *Medical Observations*. We shall never know to what extent Harvey's clinical observations were lost to us by the destruction of his papers during the Civil War.

There is a fine example of a clinical experiment in a chapter of *De Generatione*. The patient was a young nobleman, nineteen years of age, who had fractured some ribs on the front of his chest on the left side as a child. Evidently this was followed by an extensive suppurating hæmatoma with necrosis and sequestration of portions of the ribs exposing the heart.

"The noble young gentleman, son and heire to the honourable the Vice-Count of Mountgomery in Ireland discovered all to me, and opened the void part of his left side, taking off that small plate, which he wore to defend it against any blow or outward injury. Where I presently beheld a vast hole in his breast, into which I could easily put my three fore-fingers, and my thumb; and at the first entrance I perceived a certain fleshy part sticking out, which was driven in and out by a reciprocal motion, whereupon I gently handled it in my hand. But that fleshy substance (which at the first sight I conceived to be proud flesh, and every body else took to be a lobe of the lungs) by its pulse, and the differences or rythme thereof, or the time which it kept, (and laying one hand upon his wrest, and the other upon his heart) and also by comparing and considering his respirations, I concluded it to be no part of the lungs, but the cone or substance of the heart; which an excrescent fungous substance (as is usual in foul ulcers) had fenced outwardly like a sconce.

"I brought the young gentleman himself to our late King, that he might see, and handle this strange and singular accident with his own senses; namely, the heart and its ventricles in their own pulsation, in a young, and sprightly gentleman, without offense to him; whereupon the King himself consented with me, that the heart is deprived of the sense of feeling. For the party perceived not that we touched him at all, but meerly by seeing us, or by the sensation of the outward skin. We likewise took notice of the motion of his heart; namely, that in the diastole it was drawn in and retracted, and in the systole came forth, and was thrust out; and that the systole was made in the heart, when the diastole was sensible in the wrest; and also that the proper motion of the heart is the systole; and lastly, that the heart then beats upon the breast, and is

a little prominent, when it is lifted upwards and contracted into it self."

Harvey therefore verified on man and demonstrated to the King the correspondence of the apex-beat and of the pulse at the wrist with the systole of the ventricle, in conformity with what experiments on animals had shown him long before. But he added the new observation, which no animal experiment could have enabled him to make, that the normal heart is without any sense of touch.

It seems that there was a discussion in the middle of the 17th century as to which organs should be considered parts of the body, and some doctors held that only organs that had sensitivity should be included. Harvey thought that the blood, in spite of the fact that it lacked sensitivity, should be so regarded; for, as he said, "It flowes and insinuates into all parts of the body, to cater convenient dyet for them." And, clearly, his examination of the young nobleman convinced him that the same argument should be applied in the case of the heart.

The Work of Fracastorius Forgotten

In the generation before Harvey, Hieronymus Fracastorius was appointed in 1501 lecturer on logic at Padua. In 1546 under the title *De Contagione* he published a small quarto book in Latin of 77 pages of text. He states that not all contagions are transmissible at a distance but all are communicable by contact. He says: "I call *fomites* clothes, wooden things and other things of that sort which in themselves are not corrupted but are able to preserve the original germs of the contagion and to give rise to its transference in others."

The work of Fracastorius on contagion must be regarded as a great, if for a time isolated, landmark in the doctrine of infective diseases. It was the result of the wide and practical study of epidemics of plague, typhus, syphilis, and foot-and-mouth disease occurring in northern Italy in his time, and of a still more intensive contemplation and reasoning on what he had seen and how he could interpret it. During his lifetime and for years afterwards the works of Fracastorius were widely read and studied, but by degrees their great importance was lost sight of by the end of the 16th century, and much that he knew and taught had to be rediscovered in the 18th and 19th centuries (Bulloch 1938).

It is interesting to note that, exactly a century after the death of Fracastorius, Harvey, in a letter dated 1653 to the most excellent and learned John Nardi of Florence, stated that he found it very difficult to conceive how pestilence or leprosy could be communicated to a distance by contagion by a zymotic element contained in woollen or linen things, household furniture, even the walls of a house, cement, rubbish, &c., as we find it stated in the book of Leviticus.

"How, I ask," says Harvey, "can contagion long lurking in such things leave them in fine and after a long lapse of time produce its like in another body? Nor in one or two only but in many without respect of strength, sex, age, temperament or mode of life, and with such violence that the evil can by no art be stayed or mitigated."

We ourselves must be careful not to be too censorious of Harvey for having failed to adopt the ideas of Fracastorius. In our own time exactly the same thing has happened repeatedly. Thus, in the case of the blood-platelets we know that Bizzozero identified them as to size and shape and saw them circulate in the web of the frog's foot in 1883. Yet medical students in 1920 were still taught that the blood-platelet was an artefact produced by a precipitate from the staining reagents used!

The State of England about 1650

It needs all our imaginative sympathy to picture what was the physical environment in which Harvey lived. Few writers have succeeded in conveying the vivid day-to-day sequence of events as they flooded down on the men and women of Stuart times; nor is it easy to restore the immediacy of their experience.

England contained scarcely more than five million people; London, Bristol, and Norwich were the only considerable towns. A large part of the land beyond the Trent was in a state of barbarism, and further north towards the Tweed the country was continually desolated by bands of Scottish marauders. Travelling by road was difficult, slow, and dangerous; as yet there were no Turnpike Acts. Men rode saddle-horses and carried their goods on pack-horses because these animals could pick their way over narrow and rough roads. Parties of people on foot often accompanied the pack-horses for the safety afforded by numbers. Hackney coaches and large broad-wheeled waggons travelled between towns with goods and passengers (Quennell 1947). Members of Parliament coming up to London travelled in bodies attended by armed guides to protect them against thieves and highwaymen. Doctors went to consultations on horseback; Harvey rode a hack with a footcloth and was attended by a running footman trained to keep pace with him. He described London as a city

"especially destitute of light, cool, and mobile air, the grand cherisher of life, and one whose grand characteristic is an immense concourse of men and animals—where ditches abound, the filth and offal lie scattered about, to say nothing of the smoke engendered by the general use of sulphurous coal as fuel."

Close around the old Gothic St. Paul's Cathedral was the walled city of London, and west of this the city of Westminster nestled around Westminster Abbey. The gables of houses made of lath and plaster almost touched as they overhung the narrow, winding, unpaved city streets. Open ditches served as sewers and the drainage was so bad that in rainy weather the gutters soon became torrents. At times black rivulets roared down Snow Hill and Ludgate Hill, bearing to the Fleet Ditch a vast tribute of animal and vegetable filth from the stalls of butchers and greengrocers. This material was thrown in profusion to right and left by coaches and carts. Until 1869 there was, of course, no Holborn Viaduct, and it was not uncommon on a dark rainy night for a horse and carriage to slide into the Fleet Ditch, and for the occupants and even the horse to be asphyxiated in the mud.

When the evening closed in over London the difficulty and danger of walking about became serious indeed. The garret windows were opened, and pails were emptied, with little regard to those who were passing below. Falls, bruises, and broken bones were of constant occurrence. Until the last year of the reign of Charles II London was not even lighted by lamps or lanterns. There was no police force and no standing army. Thieves and robbers plied their trade with impunity, yet they were hardly so terrible to peaceable citizens as ruffians of another class. It was a favourite amusement of dissolute young men to swagger by night about the town, breaking windows, upsetting sedans, beating quiet men, and offering rude caresses to pretty women.

Road traffic could cross the Thames only by London Bridge; at the level of the capital there was no other. Its arches were small and irregular and not only impeded the navigation of the river but also assisted its freezing in cold winters. The bridge was overhung by mean and crazy houses, and spears over the gates transfixed scores of mouldering heads which served to garnish the entrances to the bridge.

Most of the land north of the Thames, between Westminster and Kew, was repeatedly flooded after heavy rain; and, until Charles II built the King's Road, Chelsea, it was impossible to drive a carriage from London to Hampton Court. At that time the road passed over a Putney Bridge which was a wooden structure of doubtful strength and stability. The upper reaches of the Thames produced the most unpleasant odours, and of course the

water reached the houses, for there was no Victoria Embankment until 1870.

Chelsea and Stepney were quiet country villages with but a few hundred inhabitants. In the 17th century it was not uncommon for fellows of the College of Physicians to retire to country houses in Chelsea. For his ceaseless munificence to the college we honour today the memory of Baldwin Hamey, a younger contemporary of Harvey, who stayed at his post in London in his 65th year throughout the Great Plague of 1666. Six weeks before the Great Fire he moved to the country, renting a house in the Fulham Road in the quiet village of Little Chelsea. At that time Islington was almost a solitude, and poets loved to contrast its silence and repose with the din and turmoil of the monster London. In Harvey's time to the west and to the north of London cattle fed and sportsmen wandered with dogs and guns over what are now the boroughs of Kensington, Fulham, St. Marylebone, and Finsbury.

The houses were not numbered, nor would there have been any advantage in numbering them ; for of the coachmen, chairmen porters, and errand-boys of London only a small proportion could read. It was necessary to use marks which the most ignorant could understand. The shops were therefore distinguished by painted signs which gave a gay and grotesque aspect to the streets. The walk from Charing Cross to Whitechapel lay through an endless succession of Saracens' Heads, Royal Oaks, Blue Bears, and Golden Lambs intended for the direction of the common people (Macaulay 1848).

The children of professional men and the gentry were taught the alphabet at home by their mothers ; working women often left their children to be minded by the cobbler, who, to keep them quiet, made them learn their letters from a hornbook or battledore with the alphabet pasted upon it. The wilder regions, where farmsteads and hamlets were far apart and no such cobblers' schools existed, were served by travelling pedagogues. These vagabonds of the teaching profession would spend a month or two in one place and then pass on, often following a regular circuit that brought them back once in every three or four years to teach a new gaggle of little children to read and write. Girls commonly had less schooling than boys, and women of the labouring classes were mostly illiterate.

Arithmetic even in its elementary forms was for scholars ; in merchants' counting-houses the clerks used the abacus for their sums, as shop assistants still do today in Russia. The multiplication table was not taught, and even an educated man, wishing to reckon fifteen times four, wrote down fifteen four times and added it up.

The grammar schools and ancient foundations like Eton, Westminster, Winchester, Charterhouse, and St. Paul's, took the sons of citizens and gentry, of the clergy and the professional classes—sometimes those of the nobility. It was more usual for the nobility to have a tutor resident in the house, and for the richer gentry to send the boys to live with a private schoolmaster where five or six pupils, looked after as part of his family, occupied all his scholastic attention. From such establishments, quite as often as from the ancient and famous schools of the realm, the most eminent men emerged (Wedgwood 1955).

In London the Shoreditch Theatre was opened in 1576 two years before Harvey was born and the Globe Theatre in 1599 when he was 21. The first three books of the *Faerie Queene* were published when Harvey was 11 years old, and in the thirty years which elapsed between his going to Padua and publishing *De Motu Cordis* Shakespeare produced the plays *Hamlet*, *Macbeth*, *Othello*, and *King Lear*. We have no record as to whether Harvey ever crossed the river to see Shakespeare's plays when they were presented at the Globe Theatre. Neither do we know what Harvey thought of the *Religio Medici* although Sir Thomas Browne stated clearly his opinion of *De Motu Cordis*, for he speaks of it as a greater discovery than that of Columbus. The silence of Harvey on the question of literature and the arts by no means proves that he was ignorant of the splendours of the literature of his time. It has not been the habit of scientists in any age to make references to contemporary poetical and dramatic works, although we have a delightful exception in our last president, Sir Russell Brain, when he takes *Tea with Walter de la Mare*.

Harvey and the College of Physicians

After the execution of Charles I, Harvey turned his attention almost exclusively to the welfare of the College. In 1653 he presented "a noble building of Roman architecture (of rustic work, with Corinthian pillasters) at the Physitians' College, namely a great parlour, a kind of convocation house for the fellows to meet in below and a library above." In 1654, in his absence, he was elected president of the College, the comitia being prorogued to the next day, when he declined the honour on grounds of ill health. In 1656 he resigned his Lumleian lectureship, and on June 3, 1657, he died of cerebral hæmorrhage. He was buried in the vault beneath the Harvey chapel in the church at Hempstead, Essex, which is seven miles from Saffron Walden. In 1882 the tower of Hempstead church collapsed, fortunately doing no harm to the Harvey vault. This accident stimulated the College to appoint a committee to decide upon some further action. Finally, the lead case containing Harvey's remains was placed, in the presence of the president, Sir William Jenner, and many fellows of the college, in a sarcophagus of white marble in the chapel where it now lies. However, although the church was rebuilt, it remained without a tower, until in 1933, in Lord Dawson's presidency, the foundations of a new tower were laid. Unhappily, funds have not been forthcoming to complete the tower which remains truncated in a half-finished form.

Across three centuries of time, on this St. Luke's Day, William Harvey, the immortal Englishman who founded modern physiology, modern medicine, and the experimental method in biology, exhorts us "to search and study out the secrets of nature by way of experiment, and for the honour of the profession to continue in mutual love and affection."

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TREATMENT OF BRONCHITIS IN PATIENTS WITH RESPIRATORY-MUSCLE PARALYSIS AFTER POLIOMYELITIS

A. B. KINNIER WILSON
M.A. Cantab., M.B., M.R.C.P., D.P.M.
EXTERNAL SCIENTIFIC STAFF, MEDICAL RESEARCH COUNCIL
F. HARWOOD STEVENSON
M.D. Lond., M.R.C.P.
PHYSICIAN
From the Royal National Orthopædic Hospital and Institute of Orthopædics

WE here summarise the experience of respiratory infections in the chronic stage of poliomyelitis at the Royal National Orthopædic Hospital since 1948. Patients of this type may be admitted to hospital with bronchitis and atelectasis but labelled as pneumonia. When the respiratory muscles are paralysed, ordinary therapeutic measures against bronchitis or atelectasis are often ineffective, and retention of secretions and obstruction of the airway may cause death.

We have found that in patients with less than 30% of their expected vital capacity * (E.V.C.) serious complications often follow trivial respiratory infections. But we should prefer to say that a respiratory-tract infection in any patient with a vital capacity (V.C.) below 50% of his expected normal may cause atelectasis. A V.C. of 1500 c.cm. may seem sufficient for safety, but if one diaphragm moves $3^1/_2$ in. and the other not at all or only paradoxically, the lung may very readily collapse.

For example, one such patient, two days after the start of a slight cold, became progressively cyanosed, and in an hour or so slipped into an anoxæmic coma. Underventilation increases pulmonary secretions, and these still further impair gaseous exchange (Brewer et al. 1946, Drinker and Warren 1943); the patient was only just saved by the use of a tank respirator, postural drainage, oxygen, and per-laryngeal suction.

An even more urgent complication which we have seen is the sudden release of a "bolus" of thick sputum which may be coughed up as far as the trachea or larynx, where it sticks. The patient, unable to draw breath or utter a sound, rapidly and silently becomes cyanosed, and only very prompt and forceful manual artificial coughing can save him.

Treatment

Assisted coughing in the appropriate postural-drainage position (Stevenson 1952) is prescribed for our patients during infections, and often suffices to keep the chest reasonably clear and to prevent atelectasis. The upper and lower zones of each side of the chest are in turn sharply squeezed between the physiotherapist's two hands as the patient gives a series of coughs. After a short rest this is repeated until sputum is brought up and the rhonchi in the area cleared or diminished. Clapping or cupping is avoided, for these thin patients rapidly become too tender to tolerate such treatment, which may have to be continued for one to three weeks.

Four additional therapeutic methods, however, have also proved of great value.

The Suspended Bed

If secretions are profuse, frequent changes of position may be essential to maintain drainage for the two upper and lower zones of the chest in turn. This can be impossibly disturbing; but if it is stopped, even during the night, atelectasis may develop before morning. We have therefore used for postural drainage a bed capable of being tilted both longitudinally and laterally as required (Trueta, Kinnier Wilson, and Agerholm 1956, Kinnier Wilson 1957).

* Obtained from tables of normals for age, height, and sex (McQuarrie 1948, Myers 1925).

It is composed of a mattress, laid on a fracture-board which is hinged in the middle and suspended by six counterweighted pulley systems. Wood blocks or sandbags raise the edges of the mattress at hip level and prevent the patient from sliding off sideways. The nurses can silently alter the position of the frame in space at very frequent intervals during the night and day without disturbing sleep. The position has usually been changed half-hourly so as to place each of the four sections of the chest—left upper, right upper, right lower, and left lower—in turn in the highest position in space to allow a period of downhill drainage for its bronchi. The frame can be bent, if necessary, so as to provide an acute angulation upwards, and the patient can be laid prone, flexed at the hips, for head-down drainage and assisted coughing.

Trypsin by Aerosol Inhalation

The bronchial secretions in these cases are often exceedingly viscid, but Unger and Unger (1953) and Varga and Wild (1953), among others, have shown that they can be liquefied by aerosol trypsin. Forbes and Wise (1957) found variable sputum-viscosity changes in chronic chest patients producing more than 1 oz. of sputum a day. These results would not appear to be relevant since many of our "acute" patients could not cough up any sputum at all before the aerosol. The rapidity of effect is very striking. A simple test, dropping samples of sputum down tubes of varying bore, showed that the liquefaction of sputum produced in five minutes by an aerosol was not equalled by 45 minutes' digestion in vitro. During this inhalation the patient's breath sounds may become quite bubbly: the sputum is obviously very much thinner and can be cleared much more easily by assisted coughing.

Trypsin was usually given thrice daily as long as secretions were prominent. 125,000 Amour units in 3 ml. of Sorensen's phosphate buffer was placed in the (5 ml.) container of an Oxygenaire atomiser. A flow rate of 4–$4^1/_2$ litres of oxygen a minute was used, and the excellent baffle system of this atomiser and the 3 ft. tube between it and the face mask have, we consider, prevented virtually all side reactions. Apart from some slight stinging of the eyelid margins if the mask is allowed to ride up on the nose, we have seen no side-effects whatever. With the dosage used, no patient has been hoarse, and we have observed that trypsin given half an hour before death to a patient with acute poliomyelitis had no effect on the mucous membrane after thirty-six hours at room temperature. Trypsin is a protein, and Unger and Unger (1953) reported that two of their technicians had trivial symptoms of sensitisation while administering the drug. But no sensitisation phenomena have been reported in over 250 patients (Unger and Unger 1953, Camarata et al. 1956, and our series), though treatments have been intermittent and courses sometimes repeated.

Isoprenaline by Aerosol Inhalation

Although there has been no evidence to suggest active bronchial constriction in most of our patients, it appeared that maximal bronchial dilatation was desirable. We have, therefore, also used with the atomiser inhalations of 0·5–2·0 ml. of a 1% solution of isoprenaline—diluted to 3 ml. with distilled water. With too small a volume, the plastic tube which dips into the liquid is not always completely effective.

We have used these inhalations similarly three times a day for up to three weeks at a time. We now give the isoprenaline on each occasion immediately before the trypsin or mixed with it (Camarata et al. 1956). The inhalation is followed immediately by assisted coughing, because the loosening of the sputum may demand prompt attention to help clear it. The use of the isoprenaline should also guard against any sensitivity reaction.

Promethazine

We have given this drug orally in doses of 10 mg. (for children) or 25 mg. (for adults) night and morning as an adjuvant to reduce any swelling of the bronchial mucosa, and hence to increase the bronchial lumen. If secretions are prominent, we have usually not given promethazine in the first few days, as it seems unphysiological deliber-

ately to dry the secretions produced by an early infection, but better simply to assist their expulsion. This has also been Palmer's (1957) experience with chronic bronchitis.

We believe that, for a patient with atelectasis, trypsin is the drug of choice in the early stages of free secretion, and that promethazine has its greater value later.

Results

Table I shows the number of patients and attacks of bronchitis and of atelectasis in the series. It will be seen that over half the patients had one or more atelectases and many patients had more than one attack. In most cases, the percentage of E.V.C. increased considerably during the period of observation. But in over a third of the patients who had bronchitis, atelectases did not develop in spite of a low V.C. and considerably reduced lung movement. All but one of these patients were treated with chemotherapy and assisted coughing without aerosols. The ages of these patients with uncomplicated bronchitis ranged from 5 to 41 years, their percentage of E.V.C. from 8 to 75, and the duration of observation from four to thirty-one months. We find that as the V.C. increases, the incidence of bronchitis, and of atelectasis following bronchitis, decrease. There have, of course, also been many patients with low V.C.s who have never had bronchitis at all.

TABLE I

Type of illness	No. of attacks treated	No. of patients involved
Bronchitis (total)	66	39
Bronchitis without atelectasis ..	33	25
Bronchitis with atelectasis	35	28
1 lobe collapsed	24	21
2 lobes collapsed	9	8

The nine patients of group 1, Table II, aged between 2 and 24 years, with 10% to 50% E.V.C., were re-aerated by assisted coughing. Occasionally a bronchial blockage was cleared before collapse had had time to develop. Some relapsed following slow clearing of the infection, and constant vigilance was required. There were 15 such emergencies in this group.

Case-reports—Group 2 (with Bronchoscopy)

CASE 1.—Woman, aged 21. Less than 10% E.V.C. and atelectasis. Right lower lobe. Bronchoscopy caused immediate re-aeration.

CASE 2.—Girl aged 14. 40% E.V.C. Feb. 4, 1950—collapse of left lower lobe. Bronchoscopy failed. Feb. 9—bronchoscopy for right lung collapse. Failure. Feb. 13—clearance except for some basal segments. March—complete clearance.

CASE 3.—Boy aged 5. Bronchoscopy in January, 1950, for atelectasis of left upper lobe. Gradual clearance in three weeks. July, 1950—bronchoscopy for atelectasis of left upper lobe. Sudden death same evening.

CASE 4.—Girl aged 16. 12% E.V.C. Bronchoscopy for atelectasis of right upper lobe and patchy right lower lobe. Only gradual clearance over three weeks.

CASE 5.—Boy aged 19. Bronchoscopy for atelectasis of right lower lobe. Almost complete re-expansion, but recurred; gradually re-expanded over three weeks.

CASE 6.—Girl aged 16. Bronchoscopy for atelectasis of left lower lobe and part of left upper lobe. Lobe permanently collapsed despite repeat bronchoscopy.

CASE 7.—Man aged 33. Bronchoscopy failed (see below).

CASE 8.—Girl aged 7. 40% E.V.C. Atelectasis of the right middle lobe after lower lobes re-expanded by assisted coughing and trypsin. Bronchoscopy failed, with temporary lowering of vital capacity (see below).

Case-reports—Group 3 (Aerosols)

CASE 7.—Man aged 33. 30% E.V.C. Cyanotic coma with a coryza. Saved by tracheal suction, oxygen, and cabinet respirator. Left basal collapse gradually cleared, bronchoscopy having failed.

CASE 8.—Girl aged 7. 40% E.V.C. Frequent changes of position in suspended bed were essential for postural drainage. Both lower lobes re-expanded with aerosols; rapid clearance of middle lobe followed addition of promethazine.

CASE 9.—Man aged 24. 25% E.V.C. Cuirass respirator at night. Atelectasis cleared slowly on two occasions.

CASE 10.—Man aged 28. 28% E.V.C. A dangerous lodgment of sputum in the larynx and two atelectases cleared.

CASE 11.—Woman aged 22. 8 months pregnant. Right basal collapse cleared.

CASE 12.—Girl aged 12. Poliomyelitis in 1950. Correction of scoliosis and spinal fusion 1953. CO_2 was retained, leading to coma, in oxygen-tent. Saved by "blowing off" CO_2 in cabinet respirator. Atelectasis of right lower lobe cleared twice.

CASE 13.—Woman aged 24. 28% E.V.C. and paralysed right diaphragm. Both lower lobes re-expanded slowly on three different occasions.

CASE 14.—Woman aged 32. 23% E.V.C. Left main bronchus twice cleared before atelectasis had time to develop.

CASE 15.—Boy aged 15. 25% E.V.C. Left-lower-lobe atelectasis. Trypsin had little effect. Clearance with isoprenaline and promethazine.

TABLE II—TREATMENT OF ATELECTASIS

Group	Treatment	No. of attacks	No. of patients
1	Chemotherapy and assisted coughing only	9	9
2	Chemotherapy, assisted coughing, and bronchoscopy (11 bronchoscopies) ..	9	8
3	Chemotherapy, assisted coughing, aerosols and/or promethazine	17	11

CASE 16.—Boy aged 2. 75% E.V.C. but weak left trunk muscles. Three times, with a cold, right middle lobe collapsed through sitting with trunk concave to the right. Re-expanded with promethazine and physiotherapy.

CASE 17.—Boy aged 8. 40% E.V.C. Re-expansion of middle and upper lobes of right lung with isoprenaline. Promethazine alone ineffective.

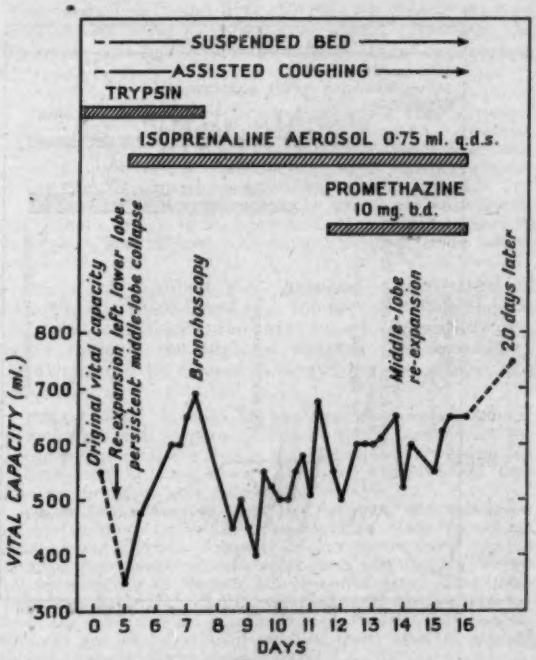

Fig. 1—Case 8. Effect of bronchoscopy, isoprenaline, and promethazine on the vital capacity.

Discussion

The severity of the attacks cannot be usefully classified, because there are so many variables. Most of the illnesses in group 1 were less severe than those in groups 2 and 3, since the latter two groups were those for whom more intensive treatment seemed desirable—usually because of the quantity or quality of the secretions ,or the patients' general or muscular condition.

Simple assisted coughing backed by the appropriate chemotherapy, as used for group 1, will in many cases abort atelectasis perfectly well, though some patients may relapse if control of the infection is slow. There was one death in this series, when a patient receiving assisted coughing suddenly moved much sticky secretion, which caused widespread bronchial blockage. If trypsin had been commercially available and given to the patient, this disaster might have been avoided. Nowadays we would probably give more of these patients aerosols.

In group 2 only one immediate re-expansion followed 11 bronchoscopies ; indeed, there was for a time a considerable increase in physical signs in some patients (fig. 1). One lower lobe remained permanently collapsed in spite of 2 bronchoscopies, and one patient died shortly after bronchoscopy. Like ourselves, Camarata et al. (1956) appear to have gradually given up bronchoscopy ; but they had to use instead a cough machine or tracheotomy. We have found assisted coughing and postural drainage sufficient in our cases. Some patients responded rapidly to aerosol and/or anti-histamine therapy (group 3) the atelectasis clearing in under twenty-four hours. In other cases resolution was as slow as in some of those listed in groups 1 and 2. But four points should be noted.

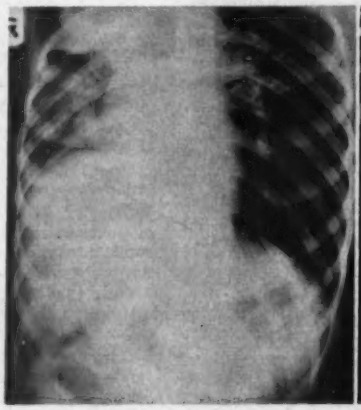

Fig. 3—Portable X-ray film taken before starting aerosol therapy.

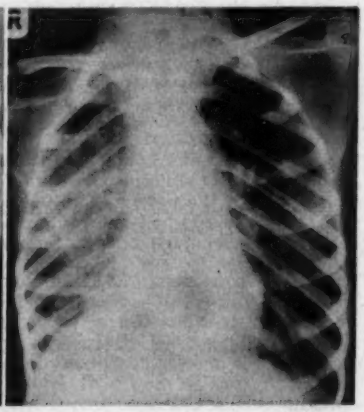

Fig. 4—Film taken eighteen hours later, after two administrations of trypsin and isoprenaline with assisted coughing.

(1) All atelectases eventually re-expanded. (2) The potentially lethal risk of inhalation of viscous sputum causing acute massive collapse or laryngeal blockage was removed. (3) The treatment is not distressing to the patient and so can be given as often as required. (4) No patient was made worse by this treatment, and there were no deaths in this group.

We have, however, sometimes used isoprenaline and promethazine without trypsin and occasionally on their own. In case 8 (the first to receive the full treatment), though trypsin and assisted coughing expanded the left lower lobe, the middle lobe remained collapsed (fig. 1). Isoprenaline increased the vital capacity but had no effect on the collapse. The collapse resolved within forty-eight hours of giving promethazine by mouth. In case 17 (fig. 2) there was no resolution of the atelectasis in three days of promethazine alone, partial resolution after a course of 0·5 ml. isoprenaline by aerosol t.d.s., and complete resolution (with a further rise of vital capacity) when the dose of isoprenaline was increased to 1 ml. The collapse in case 15 responded to isoprenaline and promethazine when trypsin alone had failed. In case 16, assisted coughing without promethazine was ineffective, but with promethazine the atelectases resolved. A further patient, with acute poliomyelitis (not included in this series), expanded his left lower lobe after administration of isoprenaline by aerosol, when assisted coughing alone had failed.

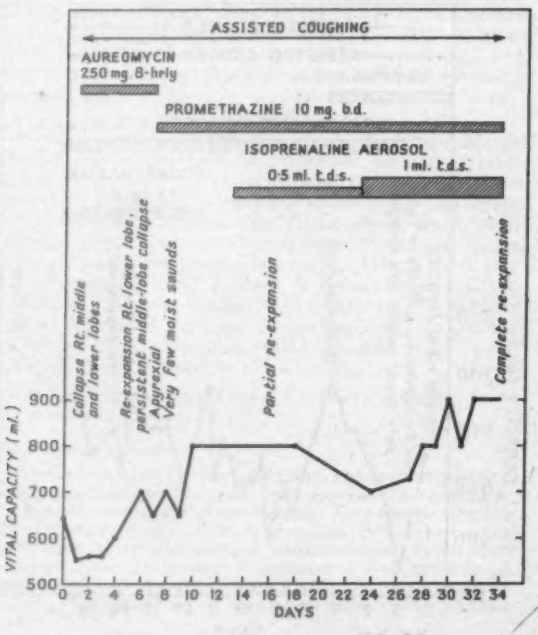

Fig. 2—Case 17. Effect of promethazine and two dosages of isoprenaline aerosol on the vital capacity.

Clinical Routine

Now, when a patient has a "cold," a covering antibiotic against bacterial secondary invaders is given, and (if there are any chest symptoms) assisted coughing as well. The vital capacity is measured daily. A fall is common after the first or second day, as the bronchial secretions increase. It may be possible for the physiotherapist alone to keep the chest reasonably clear and to prevent atelectasis. But if many rhonchi develop or the sputum becomes sticky, we add trypsin and isoprenaline inhalations, and later perhaps promethazine. Even with major atelectasis we do not now call for bronchoscopy. We may be able to produce re-expansion in a few days and while there is still considerable secretion in the chest ; or the patient may progress after a week or two to the stage of recovery from the original infection and remain with an area of collapse. We do not use trypsin on a dry chest as there seems little point in doing so. We persist, though, with physiotherapy, isoprenaline and promethazine : even after two or three weeks we have

by this routine invariably obtained ultimate re-expansion of the collapsed lobes.

The importance of this, to a patient who may otherwise be faced with a bronchoscopy for chest infections, at not infrequent intervals, cannot be overestimated. We believe that there is no necessity to rush to bronchoscopy because a complete lobe has become collapsed, even to the extent of its sinking airless and solid into the paravertebral gutter. Anyone who has seen the soft velvety appearance of the bronchial mucosa during an attack of bronchitis can readily understand why bronchoscopy is not only unnecessary but may even be harmful. The figures, as well, clearly do not justify bronchoscopy in these cases of bronchitis with atelectasis following poliomyelitis.

Respiratory aid in the acute stage by cuirass or cabinet respirator has in some cases, of course, been needed. In at least one patient (case 8) an oxygen-tent was used on the suspended bed. It need not be emphasised that every patient in this respect requires individual management.

Finally, the vital capacity has often been higher after these acute infections than it was before.

Addendum

Since this paper was written we have seen a case which perfectly illustrates our thesis. A boy of 15 had been admitted to another hospital with a provisional diagnosis of pneumonia. Fig. 3 shows his chest X-ray on admission and fig. 4 a film taken eighteen hours later after he had had two trypsin and isoprenaline inhalations with assisted coughing. His heart was returning to normal position within fifteen minutes of starting the first aerosol therapy and air entry was equal on both sides clinically and to amplification measurement on the electronic stethoscope (Kinnier Wilson, Fothergill, and Taylor 1956). The subsequent course to complete recovery was uneventful, the vital capacity increasing by 10% over his figure of three months previously.

Summary

The management of respiratory infection in the chronic stage of poliomyelitis is described, based on experience with thirty-nine patients.

Treatment is advocated with chemotherapy, assisted coughing and postural drainage, aided by aerosol inhalations of trypsin and isoprenaline, and at times oral promethazine.

Bronchoscopy in these cases has been shown to be commonly ineffective, sometimes harmful, and in any case not necessary.

This work has been possible as a result of the free hand given us in the treatment of their poliomyelitis patients with respiratory infections by the surgeons under whom they were admitted to the Royal National Orthopædic Hospital country branch at Stanmore. Dr. C. H. Lack and his bacteriological staff have given invaluable help in advising as to bacterial sensitivities and appropriate chemotherapy. Dr. A. G. Towers' tests on sputa with trypsin must also be recorded. The unsparing cooperation of the physiotherapists and nurses in the treatment of these very demanding emergencies has been beyond praise.

We wish also to acknowledge the cooperation of Dr. J. F. P. Skrimshire in the case described in our Addendum and thank him for the loan of the film reproduced in fig. 3.

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EMERGENCY TREATMENT OF RESPIRATORY FAILURE IN POLIOMYELITIS

H. B. C. SANDIFORD
M.R.C.S., F.F.A. R.C.S.
CONSULTANT ANÆSTHETIST, RESPIRATORY POLIOMYELITIS UNIT INFECTIOUS DISEASES HOSPITAL, PORTSMOUTH, HANTS

IN the last few years much thought has been given, and considerable sums spent in an effort to reduce the death-rate and morbidity resulting from respiratory poliomyelitis and polyneuritis. The broad outlines of treatment devised by Lassen and his associates (Lassen 1953) for respiratory failure in poliomyelitis are now internationally accepted and save many lives. But, though the seriousness of anoxia in this condition has been emphasised by Lassen (1956) and Trueta et al. (1956), I doubt whether it is really appreciated by all doctors and nurses treating poliomyelitis.

I have come to regard any anoxic episode in such patients as a nail in their coffin—and I know to my sorrow that there are very few nails to a coffin. From the start, therefore, one must make every effort to prevent anoxia of any degree or duration. This preventive treatment must begin at the periphery and not merely when the patient arrives at the respiratory unit. This means that a suitably trained doctor should go to collect the patient. He should be familiar with the detailed diagnosis and treatment of respiratory failure, and he should be able to use a bronchoscope quickly and to intubate a patient gently under local analgesia. Such people are usually consultant or senior-registrar anæsthetists.

As we have an ambulance specially equipped (Sandiford and McDonald 1956) to transport these patients, the anæsthetist travels in the ambulance knowing that he has every reasonable facility to treat them. In two years I have personally collected more than 20 patients for admission to this unit. This experience has left me in no doubt about the benefits of such a routine.

Obviously some cases do not need such full supervision and, if on the telephone the case is reliably described as early and dry, one may be able to send an experienced nurse to collect the patient. However, the following case-notes show the value of skilled supervision.

Illustrative Case-reports

Case 1.—A periphery hospital requested that a patient with "mild" respiratory poliomyelitis should be admitted. The services of the newly-organised ambulance and team were declined because the case apparently did not warrant it and because a doctor was travelling with the patient.

The patient was examined in the ambulance immediately on arrival; no sign of life was found. He was bronchoscoped, intubated, and inflated with oxygen without delay, but to no effect.

Since this incident the physician-superintendent of this hospital has ordered that the special mobile respiratory unit (ambulance) and team must bring in every case when there is the slightest suggestion of respiratory involvement; he refuses to accept patients unless this is done.

Case 2.—Mrs. A, aged 32, had been diagnosed as having polyneuritis with respiratory failure for six hours. At the periphery hospital she was in a tank respirator with known collapse of both lung bases. Her vital capacity was very low, and both lungs were obviously "wet."

Before being removed from the respirator she was given oxygen to inhale for two or three minutes; then thiopentone 0·15 g. was injected, followed by suxamethonium chloride 20 mg. Bronchoscopy and suction were performed, followed by intubation with Magill's no. 10 cuffed tube. The lungs were then inflated and both expanded well. In five minutes from the induction the patient had recovered consciousness. She did not settle on hand inflation, even after 50 mg. of pethidine given slowly intravenously.

Transferred to the ambulance, she settled immediately on a Radcliffe (intermittent positive pressure) machine and slept

for most of the two and a half hours' journey to the respiratory unit. The tracheotomy team had been alerted by telephone before she left the periphery hospital, and the operation was agreed by radiotelephone during the journey. She was taken straight from the ambulance into the theatre. Her general condition was better at the end of the journey than it was at the start.

This patient unfortunately died some days later following complications and two serious anoxic episodes.

Case 3.—B, a large woman, aged 28, had recently developed polyneuritis and was in a tank respirator at a periphery hospital with collapse of the right lung base. Vital-capacity readings of 500, 600, and 800 c.cm. were obtained.

It was decided not to institute any active treatment, but she was transported in the left lateral position with 8° of head-down tilt. During much of the journey she was percussed by the nurse and encouraged to cough. Radiography on arrival at the unit showed full expansion of both lungs, and a single vital-capacity reading was 1100 c.cm. She did not need further help from a respirator and made a good recovery.

Case 4.—An Army officer, aged 23, was admitted to a periphery hospital fifty miles away with the tentative diagnosis of poliomyelitis. Twenty-four hours after admission he had difficulty of respiration and was put into a tank respirator. Five hours later his transfer was requested.

When seen he was obviously distressed but not cyanosed. His tidal volume in the respirator was very low, and no further time was lost in examination. He had quadriplegia. Under local analgesia he was intubated with Magill's no. 10 cuffed tube; when the lungs were inflated they expanded well. He was then transferred to the ambulance and connected to a Radcliffe I.P.P. pump. After travelling for about twenty minutes and being apparently quite well, he firstly went slightly blue and became unconscious before oxygen could be turned on. No fault being found in the machine, he was bronchoscoped quickly; no obstruction being found, he was reintubated and inflated by hand. His colour returned and he regained consciousness. On arrival his condition was satisfactory, considering all that had happened to him in the previous twelve hours.

Case 5.—A well-built sailor, aged 28, had been in a tank respirator for fourteen hours when first seen. His condition then was apparently satisfactory, and he seemed to be "dry." His vital capacity was very low, but he continued to ask all around him when he would come out of the respirator. As the journey would take quite three hours, there appeared to be no alternative to intubation. This was done under brief general anæsthesia, but when he recovered consciousness he would not cooperate. By using his pharyngeal muscles he repeatedly dislodged the Magill's tube from the angle-piece; he was reluctant to open his mouth when asked, and then often bit my fingers when I tried to retrieve the tube. If the end of the tube was kept outside the teeth for safety, he bit the tube, blocking it; when a prop was placed between the teeth, he pushed it out. Even after tracheotomy he did not make progress, and he died of cardiovascular failure forty-eight hours after leaving the periphery hospital.

We do not yet possess ideal equipment for use on the patient who has considerable respiratory failure and is "dry." A portable "iron" lung, worked by batteries, is made by Monaghan of Colorado, but the cost is high. Emerson of Massachusetts has made a type of cuirass which is likely to be satisfactory on anyone, and with a portable pump might be very useful in an ambulance. The problem is being studied in this country.

In our experience if a "dry" patient has been intubated to allow artificial respiration during transportation that patient will soon need a tracheotomy even though, had he been continuously in a tank respirator, one would not have anticipated this interference. This conversion of a "dry" patient into a "wet" one might be caused by brief anæsthesia and too little sedation afterwards. The serious difficulties encountered in case 5 would not have occurred if tubocurarine had been given in intermittent doses. Possibly the same drug could help to prevent the unexpected tracheotomies, and so we intend to use tubocurarine as a relaxant on our next patient who has to be intubated for transportation and to use intramuscular paraldehyde as a sedative: the patient will be inflated by an I.P.P. machine. Should this technique prove to be satisfactory it might be a more practical one than to use a special cuirass or a portable "iron lung."

Transport by Helicopter

We have at our disposal, under certain conditions, a helicopter. Though the use of a helicopter undoubtedly reduces the time taken in transporting the patients, all manipulations are more difficult in the air, and the treatment described above (case 4) could not have been given in twice the time had we been airborne. Other disadvantages are that the electricity voltage is 22; therefore any pulmoflator would need a special motor or batteries. Hand inflation is not a very satisfactory alternative except for short periods; patients are always less comfortable when inflated by hand, and the movements of the aircraft make it more difficult to apply hand inflation. Noise is an added strain on the patient and makes communication with him difficult. If the patient is already receiving good treatment, there is no need to hurry on the overland journeys normally undertaken in this country. On the other hand we have had senior medical and nursing staff occupied for eight hours whilst collecting one patient. To use a helicopter on these occasions could prove to be an economy.

Supervision in Hospital

Patients with respiratory failure who have not had a tracheotomy may need constant supervision during the first one to three days. Those who have had a tracheotomy need constant supervision during the first week at least. Crises can occur from many causes. However good the nurses, one must remember that they are not also consultant anæsthetists, skilled electricians, or mechanics. At these times, therefore, a suitably trained doctor should remain each night on the unit where his services can be obtained in seconds—not in some minutes after a telephone call has been made. An experienced anæsthetist should be able to correct any trouble more quickly than a physician, and this can mean the patient's life.

Confidence

These patients are frightened, as is understandable in anyone with the feeling of impending suffocation. One must instil confidence in every possible way, being careful in one's statements before, during, and after examining them. If their vital capacity is low, I explain to them that I know as well as they do that they cannot breathe so fully as previously, but that, if they will let us do what we wish, we will not fail them. They are told that their anxiety is due to their difficulty of breathing, and that both will improve together. If intubation is to follow, the advantages of this are explained, and the fact that they will temporarily be unable to speak is mentioned. A bond of trust between patient and doctor can thus be created and will be strengthened by ensuring adequate ventilation from then onwards. Some patients subsequently told me of the great confidence which they have derived from the teamwork and especially from the fact that we collected them from the periphery.

Conclusion

For the future, I feel that, just as Ibsen played a major part at Copenhagen (Lassen 1956), so anæsthetists generally, because of their special training, can help to reduce the death-rate in cases of temporary respiratory failure. The work is exacting and takes much time; but it can also be very gratifying, and for those with an inquiring mind there are many unsolved problems.

Dr. I. M. McLachlan, physician superintendent of the Portsmouth Infectious Diseases Hospital, pioneered the ambulance project; and his leadership has made the unit a happy one for patients, for their relations, and for the staff. I am also grateful to the surgeons who have tolerated my

sudden disappearances from their operating sessions when I have had to collect new patients.

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L-NORADRENALINE IN MYOCARDIAL INFARCTION

T. R. LITTLER
M.D. Lpool, M.R.C.P.
LATE SENIOR MEDICAL REGISTRAR

C. S. MCKENDRICK
M.A., M.D. Cantab., M.R.C.P.
CONSULTANT PHYSICIAN

LIVERPOOL REGIONAL CARDIAC CENTRE, SEFTON GENERAL HOSPITAL, LIVERPOOL

THE introduction of L-noradrenaline as a pressor agent in the treatment of hypotension following sympathectomy (Goldenberg et al. 1949) has led to the extensive use of this drug in the treatment of shock and in the control of blood-pressure during surgical operations. The work of Goldenberg et al. (1948) suggests that adrenaline is not of therapeutic value as a pressor agent. They compared the action of adrenaline and L-noradrenaline in man and showed that adrenaline causes an increase in cardiac output and a fall in peripheral resistance with virtually no effect on the mean blood-pressure. In contrast, L-noradrenaline caused no change in the cardiac output, a rise in the peripheral resistance, and a rise in the mean blood-pressure.

A further possible disadvantage in the use of adrenaline by intravenous infusion is its well-known tendency to produce cardiac arrhythmias (Goodman and Gilman 1955). In view of the close chemical similarity of the two substances it might be anticipated that L-noradrenaline could also cause cardiac arrhythmias, but this aspect of its activity does not appear to have been studied as thoroughly as its pressor effect. Von Euler (1955) states that the tendency of L-noradrenaline to produce arrhythmias is rather less than that of adrenaline, and Burn (1956) does not mention this possibility. Indeed, the view is becoming widespread that the value of L-noradrenaline is enhanced by the complete absence of any central effect on the myocardium (Brigden 1956).

In contrast to this opinion Brooks et al. (1955) appeared to find that the irritative effect of adrenaline and that of L-noradrenaline on the myocardium were essentially similar.

Prof. B. G. Maegraith in a personal communication suggested that this conflict of opinion on the effect of L-noradrenaline on the heart required further consideration.

We describe here the results of our study of the action of L-noradrenaline on the myocardium in laboratory animals and the use of L-noradrenaline in the treatment of shock in myocardial infarction.

Experimental Study

Technique

Healthy rhesus monkeys and dogs were anæsthetised with intraperitoneal pentobarbitone sodium supplemented when necessary by open inhalation of ether. The effect of L-noradrenaline, adrenaline, and other pressor agents was studied. Electrocardiographic changes were recorded on a direct writing electrocardiograph, and blood-pressure changes were recorded through an intra-arterial cannula connected to a transducer type of electromanometer. Heparin was administered to prevent coagulation in the connecting polyethylene tubing.

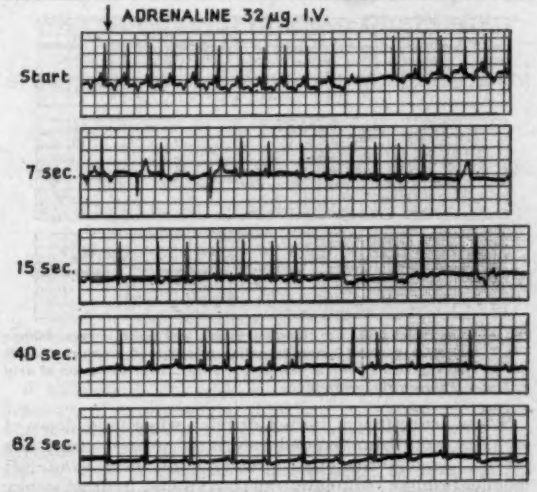

Fig. 1—Effect of intravenous adrenaline 32 µg. on electrocardiogram (lead II) of anæsthetised dog weighing 10 kg.

Results

The effects of L-noradrenaline and adrenaline on the hearts of the two species examined were essentially similar. A dosage of 0·5 µg. per kg. of body-weight often produced ventricular extrasystoles. As the dosage was increased, various cardiac arrhythmias appeared. Nodal rhythm, transient auriculo-ventricular dissociation, multifocal ventricular extrasystoles, and paroxysms of ventricular tachycardia were all observed. Injections of 6–12 µg. per kg. of body-weight produced prolonged and severe disturbance of the cardiac rhythm in both dogs and monkeys.

Although the irritative action of adrenaline and that of noradrenaline on the myocardium were closely comparable, in many of our experiments the disturbing action of L-noradrenaline was greater than that of adrenaline (figs. 1 and 2).

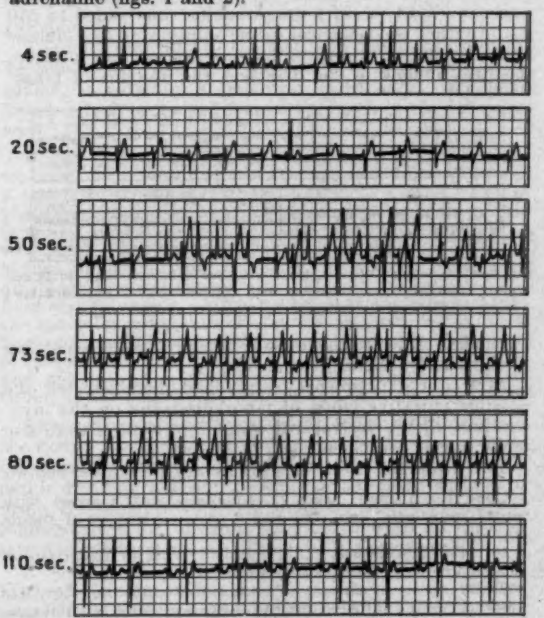

Fig. 2—Effect of intravenous L-noradrenaline 32 µg. on electrocardiogram (lead II) of same dog as in fig. 1.

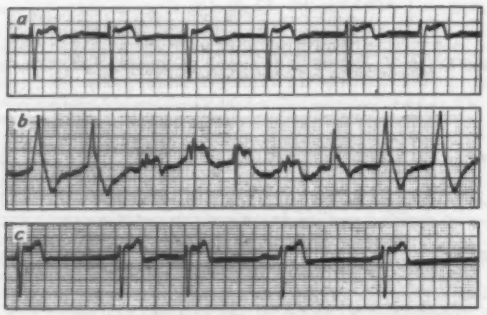

Fig. 3—Case 1 (lead III) : *a*, blood-pressure and pulse unrecordable ; *b*, 2 min. after start of L-noradrenaline drip (blood-pressure 140/100 mm. Hg) ventricular extrasystoles ; *c*, 3 min. after cessation of drip (blood-pressure 90/? mm. Hg).

These arrhythmias did not develop when large doses of atropine were administered before the pressor agent was given. Among the other pressor substances examined mephentermine sulphate, methoxamine hydrochloride, and methylamphetamine produced no changes in the electrocardiogram.

In spite of the invariable tendency of L-noradrenaline to produce serious cardiac arrhythmias, its pressor effect was very striking, and in comparable dosage it appeared to raise the systolic blood-pressure from four to eight times as high as did mephentermine, methoxamine and methylamphetamine. The pressor effects of these three drugs were essentially similar.

The conclusions of this experimental study were that, whereas L-noradrenaline is undoubtedly a most potent pressor agent, it does have in anæsthetised dogs and monkeys a very irritative effect on the myocardium, and that this is probably initiated via the vagus nerve.

Clinical Study

Twenty-two severely shocked patients with myocardial infarction were given L-noradrenaline. The method of administration was similar to that described by other workers : 4–64 ml. of L-noradrenaline was added to 540 ml. of either physiological saline solution or 5% glucose aqueous solution and given by slow intravenous infusion, the rate of flow of the drip and the amount of L-noradrenaline added to the infusion being regulated according to the blood-pressure response.

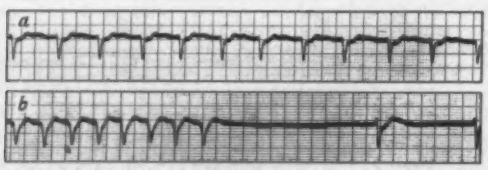

Fig. 4—Case 2 (lead VI) : *a*, blood-pressure 40?; mm. Hg ; *b*, 30 sec. after start of L-noradrenaline drip (blood-pressure unrecordable ; burst of tachycardia followed by transient cardiac arrest).

After our experimental study had demonstrated the possible irritative effect of L-noradrenaline on the myocardium, direct electrocardiographic recordings were also made during treatment.

Two examples from this series are presented below :

Case 1.—A man, aged 77, collapsed in the street with central substernal pain ; he had a previous history of angina of effort.

On admission he was pallid and cold, with an apical rate of 42 and unrecordable blood-pressure.

Treatment and progress.—Two minutes after the start of a L-noradrenaline infusion his blood-pressure was 140/100 mm. Hg, but multifocal extrasystoles developed. These subsided when the drip was stopped (fig. 3). The infusion was continued at a slower rate to try and maintain a systolic blood-pressure of about 100 mm. Hg. This required an increase in the amount of L-noradrenaline added until a dosage of 24 ml. per 540 ml. of saline solution was being given. The patient became moribund and died twenty-four hours after admission.

Case 2.—A man, aged 64, with a previous history of myocardial infarction in 1954, was admitted with severe substernal pain of twenty-four hours' duration.

On admission he was cyanosed, orthopnœic, and sweating, with filling of the jugular veins. Apical rate 90, blood-pressure 40/? mm. Hg.

Treatment and progress.—An L-noradrenaline transfusion containing 16 ml. per 540 ml. of saline solution was started. Thirty seconds after the start of the infusion the blood-pressure became unrecordable and the electrocardiogram showed a burst of ventricular tachycardia followed by cardiac arrest (fig. 4).

Our total experience in the use of L-noradrenaline has been extremely disappointing. We obtained a pressor response in only ten of twenty-two patients on whom it was used. One of these was kept alive for eight days, requiring an ever-increasing dosage of L-noradrenaline, only to die in the end. Twelve other patients gave no pressor response whatever. No patients in either group survived.

TABLE I—RESULTS OBTAINED WITH L-NORADRENALINE

Reference	No. of patients	No. who gave a pressor response	No. of survivors	Comments
Gazes et al. (1953) ..	7	7	6	Arrhythmias observed in 4 cases
Smith and Guz (1953)	6	6	4	No arrhythmias noted
Moyer et al. (1953) ..	14	12	6	No arrhythmias noted
Miller et al. (1953) ..	9	8	5	No arrhythmias noted
Kurland and Malach (1952)	14	10	4	No arrhythmias noted
Calenda et al. (1953) ..	13	9	2	No arrhythmias noted
Sampson and Zipser (1954)	30	20	16	Arrhythmia observed in 1 case
Binder et al. (1955) ..	25	23	8	No arrhythmias noted
Present series	22	10	..	Arrhythmias observed in 4 cases

Discussion

The experience of other workers with L-noradrenaline is compared with our own results in table I. A significant pressor response is shown in most studies, but considerable variation in the survival-rate is clearly shown. Cardiac arrhythmias were observed in only two other series beside our own, and there is no mention, in either of these articles, of direct electrocardiographic supervision during the period of infusion. Published references to this particular aspect of L-noradrenaline therapy are scanty, but Davies (1957) reported an arrhythmia in one of three surgical patients treated with L-noradrenaline. A similar case has been brought to our attention : a patient with biliary peritonitis, in sinus rhythm, was treated at this hospital with L-noradrenaline, and almost immediately ventricular fibrillation was seen on the electrocardiogram.

Further evidence in support of the view that L-noradrenaline has a direct effect on the myocardium has been presented by Miller et al. (1955), who produced

TABLE II—EFFECT OF L-NORADRENALINE IN SEVERE SHOCK IN MYOCARDIAL INFARCTION

Treatment	No. of patients	No. of patients recovered
Morphine and oxygen only	13	3
Mephentermine sulphate	10	1
L-noradrenaline	22	..

cardiac arrhythmias by the intravenous infusion of L-nor-adrenaline into healthy male volunteers.

The mortality-rate in cases of shock with acute myocardial infarction is said to be 70–80% (Friedberg 1956). Our own experience supports this view, and suggests that the use of L-noradrenaline does not significantly affect the outcome of the illness (table II).

Calenda et al. (1953) expressed the same opinion in describing a series of thirteen patients on noradrenaline therapy.

We believe that the irritative effect of L-noradrenaline on the myocardium, which we have observed both clinically and in laboratory animals, is not sufficiently widely appreciated in clinical practice and is a factor which should certainly be taken into account in considering the use of this powerful drug in the treatment of myocardial infarction.

In interpreting these results it should be pointed out that the dosage used in laboratory animals to produce cardiac arrhythmias was about eight to ten times the amount normally used under clinical conditions. The range of dosage needed in myocardial infarction to produce a pressor effect is about 0·1–1·6 μg. per kg. of body-weight per minute. Nevertheless, in view of the definite danger of producing serious cardiac arrhythmias with noradrenaline, we believe that if this drug is to be used at all it should only be used in myocardial infarction under direct electrocardiographic supervision.

It seems probable that a rational approach to the treatment of shock in myocardial infarction can only be achieved when our knowledge of the basic mechanism involved in this process is better understood.

Summary

At present noradrenaline is considered by many to be the drug of choice in the treatment of shock following myocardial infarction. The view is widespread that its value is enhanced by the absence of any central effect on the myocardium.

Experimental and clinical studies demonstrating the tendency of noradrenaline to produce cardiac arrhythmias are presented.

It is suggested that, in view of the dangers of producing arrhythmias, electrocardiographic supervision should be adopted if this drug is to be used in the treatment of cardiogenic shock.

Our thanks are due to our senior colleagues, Dr. E. N. Chamberlain and Dr. E. Wyn Jones, for permission to include certain of their patients in this series; to Professor Maegraith not only for suggesting this study but also for the generous provision of laboratory facilities at the Liverpool School of Tropical Medicine, where the experimental work was done; to the Liverpool Medical Research Committee for a grant to cover the expenses of the experimental work; and to Dr. Kanyika Devakul for her invaluable coöperation.

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VENTRICULO-SUBDURAL DRAINAGE IN INFANTILE HYDROCEPHALUS

SELECTION OF PATIENTS BY SUBDURAL DYE EXCRETION TEST

D. M. FORREST
M.B. N.Z., F.R.C.S.
SURGICAL REGISTRAR, THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET, LONDON, W.C.1

K. M. LAURENCE
M.A. Cantab., M.B. Lpool
HYDROCEPHALUS RESEARCH FELLOW, THE HOSPITAL FOR SICK CHILDREN

G. H. MACNAB
M.B. Edin., F.R.C.S.
CONSULTANT SURGEON, THE HOSPITAL FOR SICK CHILDREN AND THE WESTMINSTER CHILDREN'S HOSPITAL

A METHOD of treatment for infantile hydrocephalus by drainage of cerebrospinal fluid into the subdural space was recently described (Forrest et al. 1957). Its success depends on the capacity of the lining of the space to absorb fluid in reasonable quantities. Certain pathological processes render the lining non-absorptive, but we have observed that C.S.F. rapidly disappears from the intact subdural space. To select patients for the operation it is therefore necessary to have a reliable test of the absorptive power of the subdural lining, and such a test we now describe.

Method

The principle of the test is the injection of a measured quantity of dye into the subdural space and its quantitative estimation after recovery from the urine. Phenolsulphonphthalein (phenol-red) was used by Dandy and Blackfan (1913, 1914) to investigate the circulation of the C.S.F., and other workers have shown it to be a suitable indicator of the absorption of C.S.F. (Sweet et al. 1954); so we chose this dye for the present test. Our preliminary experiments with the dye showed that there was no significant difference in the rate of absorption whether it was diluted in physiological saline solution or in the patient's own C.S.F.; so we now use physiological saline solution as a diluent.

Injection

The only difficulty in the test is in the accurate introduction of the dye into the subdural space, which, of course, is normally a potential space only. We have found it best to make a formal approach in the following way:

Under general anæsthesia an incision 2 cm. long is made at the lateral angle of the anterior fontanelle; or, if this is too small, a temporal burr-hole is used. Before the dura is opened, a short fine lumbar-puncture needle is passed into the opposite lateral ventricle, and fluid is withdrawn until the dura becomes indrawn. The latter is then punctured, and the cortex falls away, leaving an air-filled subdural space, which should be inspected for fluid and adhesions. A fine rubber catheter is passed into the space for a distance of about 5 cm., care being taken to avoid laceration of the cortex and its vessels. The dura is closed round the tube with a fine purse-string suture, and the wound is closed in layers. About 5 cm. of tubing is left outside the wound, and the end is spigoted.

Twenty-four hours after insertion of the catheter, when the wound may be assumed to have sealed itself round the tube, and the patient has recovered from the anæsthetic and is drinking well and passing an adequate volume of urine, the spigot is removed, and 3 mg. of dye is injected, followed by 5 ml. of saline solution to wash all the dye into the subdural space. The tube is then resealed.

If some technical error renders the test inaccurate, a further injection of dye may be made as soon as dye ceases to colour the urine (usually about twenty-four hours after the first injection). When all the urine has been collected, the subdural tube is gently withdrawn.

Preparation of dye.—The phenolsulphonphthalein is supplied * in ampoules containing 6 mg. of dye in 1 ml. of alkali. Immediately before use the contents of the ampoule are neutralised by 1 ml. of hydrochloric acid (supplied in a separate ampoule). 1 ml. of the resulting mixture (containing 3 mg. of dye) is made up to 5 ml. with pyrogen free physiological saline solution and is then ready for injection.

Collection of urine.—All urine is collected for twenty-four hours after injection. As it is essential to avoid any loss of urine, we have found it safest to leave an indwelling catheter in girls and to fix a length of Paul's drainage tubing on to the penis in boys. The collection bottle is changed after one, two, four, six, nine, twelve, eighteen, and twenty-four hours, and the specimens are kept separate.

Estimation.—The whole of each specimen of urine is rendered alkaline and centrifuged. The quantity of dye present in the supernatant fluid is estimated colorimetrically with an Ilford filter no. 604, centrifuged alkaline urine being used as a blank, and phenol-red as a standard. The biochemical details are described by Laurence (1957).

A graph of the excretion figures at the above-mentioned intervals of time should form a smooth curve. Irregularities indicate a fault in technique or in the child's urinary flow. Experience has shown that, where a smooth curve is obtained, a reliable index of the absorptive power of the subdural space is obtained by taking the total dye excreted in the first six hours and expressing it as a percentage of the total dye injected.

Results

The test has been satisfactorily performed on 63 hydrocephalic patients. The total excretion in the first six hours varied from a trace up to 85% of the injected dye.

All the patients who had a subdural hæmatoma gave extremely low figures, whereas those in whom there was a collection of clear fluid gave slightly higher (5–30%) but still low results.

33 patients underwent ventriculo-subdural drainage with a Forrest disc (Forrest et al. 1957) after a dye test. Of these, 16 excreted 50% or more in six hours, and in 10 of these 16 operation was successful. In none of the remaining 17 patients, having excretion figures of less than 50%, has the hydrocephalus been arrested. Thus, in the whole group, there has been a successful operation in only 30%, but in those excreting 50% or more, the success-rate is 62%.

We feel, therefore, that, if ventriculo-subdural drainage is to be attempted, a preliminary dye test should be done, and only those patients who excrete 50% or more of the dye in the first six hours should be operated on.

Summary

A dye-excretion test to be used in selecting cases of hydrocephalus for the Forrest disc operation of ventriculo-subdural drainage is described. There is clear evidence that a high excretion-rate of the dye from the subdural space (50% or more within six hours of injection) indicates that the operation should be successful.

We wish to thank our colleagues at the Westminster Children's Hospital and the Hospital for Sick Children for their assistance. One of us (K. M. L.) acknowledges the support of the research committee of the Hospital for Sick Children.

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* Specially prepared for the purpose by Messrs. Savory & Moore, 143, New Bond Street, London, W.1.

IMPROVED TREATMENT FOR ALLERGIC RHINITIS

M. J. MAXWELL
M.B. Leeds, D.L.O., F.R.C.S.E.
CONSULTANT OTOLARYNGOLOGIST, NORTH AND WEST GROUPS, MANCHESTER REGIONAL HOSPITAL BOARD

MOST sufferers from allergic rhinitis derive some relief from anti-histamine therapy. There are many anti-histamine drugs on the market, and treatment becomes a matter of finding the one which produces the maximal benefit to the individual with minimal side-effects. This trial-and-error procedure is time-consuming and often discouraging to both doctor and patient. Even the best treatment which can be found may not be entirely satisfactory. It is difficult to control the symptoms of allergic rhinitis throughout the night, and many patients complain that these are worst in the early morning. Increasing the night-time dose of anti-histamine usually produces side-effects depending on the type of drug, but most often drowsiness, from excessive sedation, or dizziness.

The duration of effect of a drug may be extended by preparing it in the form of 'Spansule' capsules which have the added advantage of eliminating sharp peaks in the blood-level of the drug, thereby reducing side-effects. A powerful but short-acting anti-histamine lends itself to the application of this principle, and a compound of this type has been used in the present series of investigations.

Pharmacology

The compound used is diphenylpyraline (1-methyl-piperidyl-4-benzhydryl ether). This has a potent anti-histamine action. 0·5 mg. per kg., injected intraperitoneally, gave complete protection to guineapigs exposed fifteen minutes later to a 2·5% histamine spray for ten minutes. The toxicity is low the oral $L.D._{50}$ for guineapigs being 215 mg. per kg. When guineapigs were exposed to a 10% diphenylpyraline spray daily for four months, growth-rate was not affected and no other changes were observed.

Preliminary Investigation

A clinical trial of diphenylpyraline was made by Swartz (1954) on 100 hay-fever patients.

The results did not show the drug to be an outstanding clinical success. 89 patients obtained symptomatic relief, but the duration of effect was very variable—in some instances as short as thirty minutes. In consequence, there was a corresponding variation in the frequency of dosage: some patients could manage on three doses daily, but others had to take a dose every two hours. The amount given at each dose varied from 1 to 4 mg. There was, however, a low incidence of side-effects (12%), and these were all of a minor character. In no case was it necessary to discontinue treatment.

The available evidence, therefore, shows that diphenylpyraline is an active anti-histamine with few side-effects, but of limited clinical application owing to the difficulty of estimating amount and frequency of dosage. This disadvantage now seems to have been overcome by the new form of presentation.

Most physicians are familiar with the principle of spansule capsules. Briefly, each capsule contains several hundred tiny pellets which carry the drug with a variable thickness of coating. Some of the drug is released as soon as the capsule dissolves: the rest becomes gradually available as the pellets disintegrate at different times. The result is an even therapeutic effect lasting for about twelve hours.

A preliminary investigation was made on 25 patients with chronic allergic rhinitis.

There were 12 males and 13 females; their ages ranged from 9 to 60 years, and 14 were over 30 years of age. Patients with complications, such as nasal polyps or secondary infections, were excluded. The symptoms were classed as severe in 4 cases, moderate in 15, and mild in 6. All had been treated previously with a variety of anti-histamines, with limited improvement.

The ' Histryl Spansule ' capsules used each contained diphenylpyraline 5 mg. Every patient was given the standard dose of one capsule night and morning. The patients were seen weekly. After four weeks 19 patients were completely free from all symptoms, and the other 6 patients had only slight residual discomfort. Symptoms were controlled throughout the day and night, and no deterioration was noticed in the early morning.

2 patients noted slight drowsiness during the first two or three days of treatment, but this was only transient and did not cause inconvenience. There were no other side-effects of any kind.

Controlled Trial

The results of the preliminary investigation suggested the need for similar observations under controlled conditions. As there is often a psychosomatic element in allergic rhinitis, a random choice of patients would be expected to include a fairly high proportion of placebo-responders which would dilute a double-blind trial. An attempt was made to eliminate placebo responders by selection of the patients. Patients selected for the trial had an uncomplicated chronic allergic rhinitis of varying severity, and all had been treated previously with an anti-histamine from which they had derived only slight benefit.

The trial was made on the " double-blind crossover " principle. Two sets of thirty capsules were provided for each patient. Which set of capsules had the active material and which was inert was unknown to both the patient and the investigator. The capsules were identical in outward appearance: dissection did not provide a clue to the material as each capsule contained about the same number of similarly coloured pellets.

Each patient was given a numbered container with instructions to take one capsule night and morning and return at the end of two weeks. They were then given the second correspondingly numbered container with similar instructions.

Results

The investigator was required to answer the question: " Has the treatment been effective ? " by either " Yes " or " No." The criterion for the answer " Yes " was that the patient should be symptom-free. Evaluation was made at the end of each two-week period.

The trial was carried out on 18 patients. 5 were classed as " Yes " on the drug followed by " No " on the placebo. 10 patients were classed as " No " on the placebo followed by " Yes " on the drug. 2 were classed as " Yes " and 1 as " No " on both drug and placebo. No patient was classed as " Yes " on placebo and " No " on drug.

In other words, 15 out of 18 patients derived benefit from the drug but failed to do so from the placebo. 3 patients derived equal benefit from drug and placebo. If the evaluation was based on pure chance, this distribution would be expected once in 270 trials.

In theory the investigator has four choices—Yes/Yes, Yes/No, No/Yes, No/No. As he is aware that one set of capsules is active and the other inert, he knows that Yes/Yes and No/No must contain a wrong answer. The answers may be considered together and marked as " right " or " wrong " for each patient. The probability of chance assessment giving three or fewer wrong answers in a series of 18 patients is $P = 988 \times 0{\cdot}5^{18} = 0{\cdot}0037$. Treatment of the results in this way is, of course, an over-simplification of the problem, and gives no credit for clinical judgment.

Discussion

Altogether 43 patients were treated with histryl spansule capsules, and 34 of these obtained complete relief from their symptoms. All had been previously treated with other anti-histamines with variable success.

1 patient, a woman aged 42, had a ten-year history of severe allergic rhinitis. Skin tests failed to reveal the allergen, and she was treated by nasal cautery, zinc ionisation, and nasal sprays of various types. After trial of a number of anti-histamines, one was found which gave partial control of her symptoms. In the present investigation she first received active capsules which afforded her complete relief. When she was given inert capsules the symptoms recurred with their former severity. She was then returned to known active capsules and has since remained symptom-free.

From the patient's point of view, this treatment allows twenty-four-hour control of the symptoms with negligible risk of side-effects. From the doctor's point of view, there is no need for experiments to find the best dosage regimen. This represents a definite advance in anti-histamine therapy.

Summary

A total of 43 patients with chronic allergic rhinitis were treated with a standard dose of one 5 mg. ' Histryl Spansule ' (diphenylpyraline) capsule night and morning. Symptoms were completely relieved in 34 patients. Side-effects were negligible, 2 patients complaining of slight drowsiness.

In a " double-blind crossover " trial, 15 out of 18 patients were symptom-free on active capsules but obtained no relief from inert capsules.

The preparation used in this investigation represents a definite advance in the treatment of allergic rhinitis.

I would like to thank Dr. Alan H. Ratcliffe for his help in the design of the controlled trial, and express my appreciation of his statistical analysis—even though I seldom toss a coin to evaluate treatment. My thanks are also due to Smith, Kline and French Laboratories Ltd., for the supply of ' Histryl Spansule ' and control capsules.

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EFFECT OF PHENYLETHYLACETIC ACID AND ITS AMIDE (HYPOSTEROL) ON THE CIRCULATING LIPIDS AND LIPOPROTEINS IN MAN

M. F. OLIVER
M.D. Edin., M.R.C.P.E.
RESEARCH FELLOW, DEPARTMENT OF CARDIOLOGY, ROYAL INFIRMARY, EDINBURGH

G. S. BOYD
Ph.D. Edin.
LECTURER, DEPARTMENT OF BIOCHEMISTRY, UNIVERSITY OF EDINBURGH

MANY patients with the clinical features of coronary sclerosis have elevation of the plasma-cholesterol level, the cholesterol/phospholipid ratio (the C/P ratio) and the β/α lipoprotein ratio (Gertler et al. 1950, Barr et al. 1951, Oliver and Boyd 1953, 1955, *Lancet* 1955). This association of coronary disease with abnormalities in the circulating lipids and lipoproteins has stimulated great interest in any regime which might correct these abnormalities. Certain aromatic acids, particularly phenylethylacetic acid (α-phenylbutyrate) and its amide,* have been reported to have such an action (Cottet et al. 1953, Mathivat and Cottet 1953, Cottet and Mathivat 1955, Garrone and Bossoney 1956, Rossi and Rulli 1957).

We report here the results of giving phenylethylacetic acid or its amide, in various dosages to 24 hypercholesterolæmic men each of whom had sustained a myocardial infarct.

Methods

The 24 hypercholesterolæmic men were all outpatients with electrocardiographic evidence of an old myocardial infarct. They were all engaged in full-time or part-time work, and no alteration was made during this study to their usual routine or diet. During the control periods before and after the administration of phenylethylacetic acid or its amide the patients received identical inert tablets.

* Marketed as ' Hyposterol ' by Théraplix.

The plasma-cholesterol was estimated by the Sperry-Schoenheimer method as modified by Sperry and Webb (1950). The plasma-lipid phosphorus was estimated by the molybdenum-blue method of Allen (1940). The concentration of cholesterol attached to the α and β lipoprotein fractions was determined by the filterpaper zone electrophoresis micromethod of Boyd (1954).

Results

Phenylethylacetic Acid

Phenylethylacetic acid was administered orally in the dosage of 2·8 g. daily to 6 hypercholesterolæmic men for four weeks, and the results are shown in table I. None of these 6 men showed any change in the circulating lipids and lipoproteins.

Phenylethylacetic acid was administered orally in the dosage of 5 g. daily to 6 hypercholesterolæmic men, and the results are shown in table II. This study was curtailed after two weeks because 5 of these men developed flatulence, nausea, or vomiting; when inert tablets were substituted for the active ones, these gastric symptoms

TABLE I—EFFECT OF PHENYLETHYLACETIC ACID 2·8 G. DAILY ON THE CIRCULATING CHOLESTEROL AND LIPOPROTEINS
(Means of 6 men)

—	Plasma-cholesterol (mg. per 100 ml.)	C/P ratio	α/β lipoprotein ratio
9 weeks before course	318	0·96	10 : 90
5 weeks before course	318	0·97	..
Start of course	307	0·88	11 : 89
After 1 week	337	0·92	..
After 2 weeks	328	1·03	..
After 3 weeks	332	0·98	..
After 4 weeks (end of course)	332	0·91	10 : 90
1 week after course	337	0·90	..
2 weeks after course	324	0·94	11 : 89

settled rapidly. The plasma-cholesterol level fell in 4 of these men, but in no case by more than 12%. There was no significant change in their C/P and lipoprotein ratios.

Phenylethylacetic Amide

The amide of phenylethylacetic acid was administered orally to 6 hypercholesterolæmic men in the dosage of 1·2 g. daily for twelve weeks, and the results are shown in table III. None of these 6 men showed any change in the levels of circulating lipids and lipoproteins.

The amide of phenylethylacetic acid was administered orally to 6 hypercholesterolæmic men in the dosage of 4 g. daily for sixteen weeks, and the results are shown in table IV. In one of these 6 men there was a response: the plasma-cholesterol fell by 17%, the C/P ratio by 20%, and the β-lipoprotein cholesterol fell by 15%. 3 of these 6 men felt unusually tired and sleepy during the treatment.

Discussion

Phenylethylacetic acid or its amide was administered orally in various dosages from 1·2 to 5 g. daily to 24 hypercholesterolæmic men with coronary disease. In 1 man, who received 4 g. of phenylethylacetic amide daily, there was significant depression of the plasma-cholesterol level and the C/P and β/α lipoprotein ratios. In most of the remaining men there was no significant action of

TABLE II—EFFECT OF PHENYLETHYLACETIC ACID 5 G. DAILY ON THE CIRCULATING CHOLESTEROL AND LIPOPROTEINS
(Means of 6 men)

—	Plasma-cholesterol (mg. per 100 ml.)	C/P ratio	α/β lipoprotein ratio
17 weeks before course	290	0·96	10 : 90
10 weeks before course	280	0·98	..
Start of course	319	1·02	10 : 90
After 1 week	293	1·14	..
After 2 weeks (end of course)	278	1·09	9 : 91
1 week after course	280	1·02	..
2 weeks after course	285	1·13	..
3 weeks after course	282	1·10	6 : 94

TABLE III—EFFECT OF PHENYLETHYLACETIC AMIDE 1·2 G. DAILY ON THE CIRCULATING CHOLESTEROL AND LIPOPROTEINS
(Means of 6 men)

—	Plasma-cholesterol (mg. per 100 ml.)	C/P ratio	α/β lipoprotein ratio
12 weeks before course	260	1·07	10 : 90
6 weeks before course	256	1·07	..
Start of course	256	0·94	8 : 92
After 4 weeks	262	0·91	..
After 8 weeks	273	1·00	..
After 12 weeks (end of course)	276	1·06	10 : 90
2 weeks after course	279	1·06	..
4 weeks after course	274	1·02	10 : 90

phenylethylacetic acid or its amide on the circulating lipids and lipoproteins. Of the 6 men who received 5 g. of phenylethylacetic acid daily 4 showed slight lowering of the plasma-cholesterol level (less than 12% in each case), but there was no change in their C/P and β/α lipoprotein ratios; all of these 4 men experienced nausea or vomiting and could not take their customary diet.

These results suggest that phenylethylacetic acid lowers the plasma-cholesterol level in only a small proportion of people; and in our experience most of these developed anorexia, nausea, or vomiting. These findings are quantitatively at variance with the observations of Cottet and Mathivat (1955), who recorded lowering of the plasma-cholesterol in 75–80% of patients receiving phenylethylacetic acid in doses of 2·4 to 3·2 g. daily. On the other hand they support the reports of Fredrickson and Steinberg (1957) and Grande et al. (1957), who did not observe any significant influence of phenylethylacetic acid or its amide on the circulating lipids and lipoproteins.

Conclusions

Phenylethylacetic acid or its amide was administered in various dosages to 24 hypercholesterolæmic men with coronary disease.

In 19 men there was no significant alteration in the levels of the circulating lipids and lipoproteins.

TABLE IV—EFFECT OF PHENYLETHYLACETIC AMIDE 4 G. DAILY ON CIRCULATING CHOLESTEROL AND LIPOPROTEINS
(Means of 6 men)

—	Plasma-cholesterol (mg. per 100 ml.)	C/P ratio	α/β lipoprotein ratio
6 weeks before course	285	1·09	8 : 92
1 week before course	314	1·02	..
Start of course	277	0·88	7 : 93
After 4 weeks	282	0·89	..
After 8 weeks	300	0·90	..
After 12 weeks	303	1·10	..
After 16 weeks (end of course)	310	1·10	9 : 91
2 weeks after end of course	302	1·00	..
4 weeks after end of course	306	1·06	9 : 91

The plasma-cholesterol level was depressed in 5 men, and 4 of these experienced anorexia, nausea, and vomiting.

We wish to thank Dr. Rae Gilchrist and Prof. G. F. Marrian, F.R.S., for their advice and encouragement; and Dr. K. G. Green, of Imperial Chemical (Pharmaceuticals) Ltd., for supplies of phenylethylacetic acid and hyposterol. This research was supported by a grant from the Scottish Hospital Endowments Research Trust.

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MERALGIA PARÆSTHETICA IN PREGNANCY

PHILIP RHODES
F.R.C.S., M.R.C.O.G.
SENIOR REGISTRAR, ST. THOMAS'S AND LAMBETH HOSPITALS, LONDON, S.E.

MINOR disorders of pregnancy are often not diagnosed accurately, because they are of little significance in the management of pregnancy and labour, and will improve with the passage of time. It is of value to make an accurate diagnosis so that the patient may be reassured with authority that no harm will come of the ailment, either to herself or the baby. Meralgia paræsthetica—i.e., paræsthesiæ in the distribution of the lateral femoral cutaneous nerve—is a minor disorder of pregnancy which can cause much worry to the patient.

CLINICAL FEATURES

Prevalence.—Meralgia paræsthetica in pregnancy is not common, but has been seen in 7 pregnant women in a year at St. Thomas's and the Lambeth Hospitals. There is no doubt that when the significance of the clinical picture is realised more cases will come to light.

The ages of the patients were 37, 20, 25, 41, 32, 37, and 33 years. *The duration of pregnancy* when the diagnosis was first made was 33, 32, 25, 31, 30, 33, and 33 weeks.

The side affected was the right in 4 cases, the left in 2 cases, and both in a woman with twins.

Parity.—5 women were carrying their first babies, 1 her second, and 1 her third baby.

Symptoms.—The typical history is of a sensation of numbness, coldness, tingling, or slight pain in the outer side of the thigh, and sometimes in the front of the thigh down as far as the knee. This sensation is eased in some cases by sitting up.

Signs.—There is nothing to see, but there is an area, the size of a hand, on the outer aspect of the thigh in its middle third, where the feel of pinprick and cotton-wool is dulled; this can easily be mapped out.

Course.—The symptoms, never very severe, vary in intensity from time to time, and in the puerperium the odd sensations disappear.

DISCUSSION

Meralgia paræsthetica is well recognised in medicine and surgery (Aird 1950, Price 1956). It usually affects middle-aged men and may come on with walking, suggesting arterial disease (Brain 1955), or it may come on in bed and be relieved by sitting up, so flexing the hip (Aird 1950). Sometimes complete anæsthesia of the outer side of the thigh develops. Aird and Brain agree that the disease affects males almost exclusively. In men surgery may be necessary for the relief of symptoms.

The lateral femoral cutaneous nerve arises from the posterior divisions of the 2nd and 3rd lumbar segments. It emerges from under the psoas major and runs on the iliacus muscle to reach the anterior superior iliac spine. It then runs under the outer end of the inguinal ligament to reach the thigh. It divides into anterior and posterior branches which pierce the fascia lata about 4 inches below the anterior superior iliac spine, and the terminal branches reach down to the knee.

The cause of the symptoms is irritation of the nerve. A disc protrusion may press on the nerve (Walshe 1951). Aird (1950) says that in some people the outer end of the inguinal ligament splits to enclose the nerve, and that hyperextension of the hip causes the deep fasciculus to compress the nerve. On this basis he recommends division of the deep slip of the ligament, so preserving the nerve and its function. Brain (1955) believes that fibrous bands in the fascia lata irritate the nerve, and that resection of the nerve is necessary. Walshe (1951) says that the anterior branch runs in a tunnel in the fascia lata, and this requires division to relieve the symptoms.

The disc hypothesis may account for some cases, but my patients did not complain of backache. It is doubtful whether radiographs of the spine would be of value in these cases, but they were not taken because of possible damage to the fœtus.

Aird's hypothesis is attractive, for in pregnancy there is a lumbar lordosis, increased pelvic inclination, and extension of the hip. It would also account for the comparative scarcity of the cases, as the symptoms depend on an anomaly of the inguinal ligament, present presumably in only a few women.

Irritation of the nerve in its course in the thigh might explain why the area of dulled sensation begins about 4 inches below the anterior superior iliac spine, but this might equally well be due to the overlap of cutaneous areas from neighbouring nerves.

No effort will be made to say which is the most likely hypothesis. The evidence is too inconclusive. It seems that the posture of the pregnant patient leads to irritation of the nerve in some part of its course. The sex distribution of the condition is interesting and unexplained, but that pregnancy predisposes to it seems clear.

Treatment is largely unnecessary as the symptoms are so mild. Reassurance is what the patient needs. Some patients have liked to rub in methyl salicylate liniment. Surgery seems quite unnecessary.

SUMMARY

Meralgia paræsthetica is an uncommon minor disorder in pregnancy. It is due to irritation of the lateral femoral cutaneous nerve, leading to paræsthesiæ and loss of sensation. No active treatment is necessary.

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Preliminary Communication

ENHANCED EFFECTIVENESS OF GANGLION-BLOCKING AGENTS IN HYPERTENSIVE PATIENTS DURING ADMINISTRATION OF A SALURETIC AGENT (CHLOROTHIAZIDE)

MANY clinicians agree[1 2] that sodium-restricted diets enhance the antipressor effect of ganglion-blocking agents in patients with hypertension. However, it is difficult to demonstrate this regularly, partly because of the inability of patients to maintain these regimes. The availability of a new diuretic and saluretic agent—chlorothiazide (6-chloro-7-sulphamyl-1, 2, 4-benzo-thiadiazine-1, 1-dioxide, 'Diuril' Merck & Co.)[3]—prompted us to study the relationship between requirements for ganglion-blocking agents and sodium depletion over short periods in hospital and over longer periods at home. The present data demonstrate enhanced effectiveness of ganglion-blocking agents in hypertensive patients during chlorothiazide-induced sodium depletion and indicate also that this may be due in part to diminished blood- and plasma-volume.

MATERIAL AND METHODS

Observations were made in 9 hospital in-patients with severe hypertension under treatment with ganglion-blocking drugs (3 on mecamylamine, 1 on pentolinium tartrate and 5 on chlorisondamine chloride). 6 patients had been on treatment for periods of nine months to three and a half years, and had attained stable daily requirements of the drugs; in 3 patients under treatment

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DATA ON 9 PATIENTS TREATED WITH CHLOROTHIAZIDE

Regime	No. of patients	Means and ranges of changes					
		Ganglion-blocker dose	Arterial pressure		Plasma-volume	Body-weight	Urinary sodium output
			Lying	Standing			
Sustained sodium restriction	5	−61 (42–80)	−7 (2–10)	−14 (4–22)	−21* (10–32)	−3 (2–3)	+260 (89–465)
No sodium restriction	3	−42 (32–48)	−2 (0–4)	−11 (6–16)	−11 (7–18)	−1·2 (1–1·5)	+53 (4–132)
Sodium restriction during diuretic period	1	−80	−12	−27	−18	−5	+254

Data are averages of observations during diuretic periods compared with averages during control periods and expressed as percentage change.
*4 tests only.

for less than a month, the dosage of ganglion-blocking drug had been stabilised before the experiment was started.

None of the patients showed signs of congestive failure. 5 had been on a low-sodium diet yielding about 500 mg. of sodium daily, and this régime was continued during the investigation; 3 of 4 with previously unrestricted sodium intakes continued without further restriction and in 1 sodium intake was reduced to 2·0 g. daily during the period of chlorothiazide administration.

The study consisted of control, diuretic, and "recovery" (sodium-repletion) periods in hospital and was followed by further long-term observation. During the four-day control period the requirement for ganglion-blocker was established in terms of that dosage necessary to maintain desired levels of standing arterial pressures; in the diuretic period of four days diuretic doses (2·0 g. daily in patients weighing more than 100 lb., 1·0 a day in those weighing less) of chlorothiazide were given for the first three days. During the first two days of the four-day "recovery period," sodium chloride was given by mouth in amounts equivalent to from one-half to the total sodium output during the diuretic period. The daily averages of four blood-pressure readings—taken lying and standing—were calculated. Also recorded daily were: dosage of blocking agent; body-weight; urine volume; and excretion of sodium, chloride, and potassium. At the end of each period measurements were made of plasma-volume, using Evans blue (T-1824), of plasma-electrolytes, and of blood-pressure responses to venous congestion of three extremities ("bloodless phlebotomy").[4]

In 7 patients like observations have been continued at home for periods of one to five months, recording the effect of courses of chlorothiazide, taken for three consecutive days in each week, on blood-pressure (four readings daily—lying and standing) ganglion-blocker requirements, body-weight, symptoms, and clinical course.

RESULTS

The data from the short-term experiments are summarised in the accompanying table.

In all these patients chlorothiazide caused diuresis with excess excretion of sodium, chloride, and potassium; increments of sodium and chloride output were proportionally greater than that of potassium. There also occurred losses of body-weight and decreases in plasma-volume with hæmoconcentration assessed by the hæmatocrit. These changes were associated with sharp decreases in ganglion-blocker requirements and reductions in systolic and diastolic pressure averages, lying and, to a greater degree, standing. All these changes were consistently greater in the patients who had maintained sodium restriction, and also in the patient whose sodium intake was restricted during the administration of the diuretic, than in the patients on unrestricted sodium intake. After sodium repletion blood-pressure, body-weight, plasma-volume, and drug requirement tended to return to control levels. No significant changes were observed in plasma-electrolyte concentrations, which only varied slightly and within normal limits.

Blood-pressure responses to venous congestion were not remarkable. These consisted in falls in systolic pressure in 7 patients ranging from 10 to 60 mm. Hg. These responses were alike at each of the three observations in 7 patients; 2 patients showed a somewhat enhanced blood-pressure fall at the end of the diuretic period.

Home observations showed similar responses with regard to blood-pressure, ganglion-blocking requirement, and body-weight loss following each weekly course of chlorothiazide, although weight loss was not usually as great as it had been during the patient's stay in hospital.

These observations must be extended in order to establish the possible therapeutic value of this regime. At present 7 patients have been under observation for one to five months, and these have shown progressive decreases in ganglion-blocker requirements and, at the same time, better control of their hypertension than formerly. Symptoms of parasympathetic blockade (constipation, dryness of the mouth, blurring of vision) have been abated or eliminated. Most of the patients have reported improvement in general well-being and in capacity for work. So far we have seen no evidence of intolerance, toxic effects, or irresponsiveness to chlorothiazide given in this manner.

DISCUSSION

It is known that surgical sympathectomy enhances the depressor effect of small losses of blood [5] and ganglion-blocking drugs have a similar effect.[6] Hence, while other mechanisms—such as depletion of sodium from ganglia or vessel walls—may enter into the anti-hypertensive effect of intermittent courses of chlorothiazide, we believe that the effect is primarily hæmodynamic. Presumably, decreased plasma-volume decreases venous return and lowers blood-pressure, particularly in the standing position. That this is the case is further suggested by the effect of partial sodium repletion, which may not always restore to the patient all the sodium he has lost, but does restore plasma-volume and also the prediuretic large requirement for ganglion-blocking drugs. Still, assuming this to be the case, we would have expected definite enhancement of the depressor effect of "bloodless phlebotomy" during sodium depletion, and we are unable to explain the irregularity of our findings in this regard. The possibility of an intrinsic anit-pressor effect of chlorothiazide has not been excluded, but seems unlikely.

As we have already remarked, it would be premature to suggest that chlorothiazide will prove a useful adjunct in the long-term treatment of hypertensive patients. The present small experience suggests that this may be so. Our former experience with this agent in a large number of patients, to whom it was given as a diuretic, has not demonstrated that it is dangerous or causes untoward effects.

We acknowledge with pleasure the assistance of Dr. John R. Beem, Merck Sharp & Dohme Co., West Point, Pa., in

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providing chlorothiazide and of Dr. K. G. Kohlstaedt, Lilly Laboratory for Medical Research, Indianapolis General Hospital, in supplying us with Evans blue.

FERNANDO A. TAPIA M.D.
HARRIET P. DUSTAN M.D.
R. A. SCHNECKLOTH M.D.
A. C. CORCORAN M.D.
IRVINE H. PAGE M.D.

Research Division, Cleveland Clinic Foundation, and Frank E. Bunts Educational Institute, Cleveland, Ohio

New Inventions

A SUSPENDED BED GIVING LONGITUDINAL AND LATERAL TILT FOR POSTURAL DRAINAGE

POSTURAL drainage is of great value in poliomyelitis with respiratory paralysis, [1-3] not only in the acute stage but also in the more severely paralysed, [4] in whom a cold not infrequently develops into acute bronchitis; because of their weak cough, these patients have difficulty in ridding themselves of their bronchial secretions. Dr. J. G. Scadding (personal communication) has found that, after bronchography, appreciable amounts of contrast medium can drain into the lower lung in an hour with the patient lying on his side. It therefore seems logical, if atelectasis is to be avoided, to change the patient's posture from side to side at least every two hours when they have poor chest muscles and bronchitis; but such handling disturbs sleep, can be most exhausting, and may have to last a fortnight.

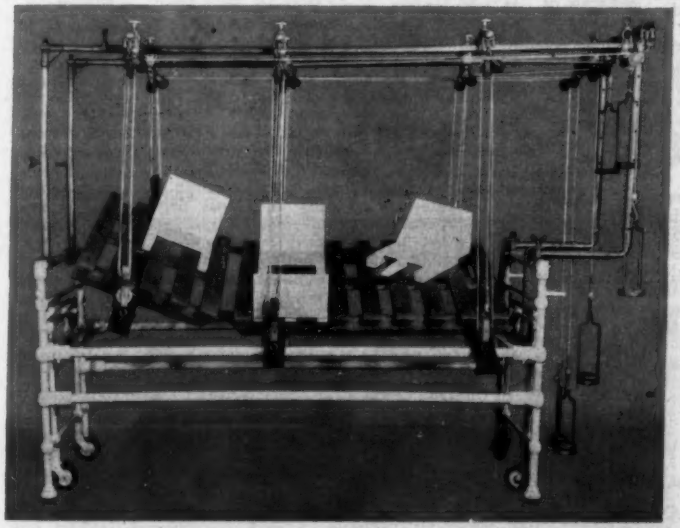

Fig. 1.

A child, aged 6 years, who had had poliomyelitis three months previously, leaving her with a vital capacity of 40% of what it should have been for her age and height, developed severe productive bronchitis after a cold. The large quantity of sputum made drainage by frequent changes of posture essential. She was, however, very ill and therefore was turned from side to side as infrequently as we dared—i.e., every two hours. In spite of this she was hardly getting any rest, because it took her nearly two hours to fall asleep again. To counter this condition, the suspended bed was devised.

At this hospital many patients in plaster beds are suspended from pulley systems on a balkan beam. [5,6] An extension of this method, using standard parts of the Hoskins and Sewell overhead-beam system, allows postural drainage with lateral tilt to be quickly provided. On this bed the patient's position was changed every half-hour without waking her, and she slept well for the first time in four nights.

CONSTRUCTION

A fracture-board is articulated by sawing it through 2 ft. 9 in. from the head end, bevelling the cut surfaces, and joining the two pieces with hinges (fig. 1). Three pieces of wood, each 3 in. by 1 in. and 18 in. longer than the width of the bed, are screwed across the fracture-board underneath: 9 in. from the head end; just beyond the articulation towards the foot; and 4 in. from the foot end. U-bolts are fastened on top of the ends of the transverse pieces of wood to take the pulley systems shown in fig. 1. The six pulley systems are hung from cross-bars resting on two balkan beams. A single beam will carry the weight and has been found sufficient in this hospital for suspending patients in plaster beds; but for postural drainage (fig. 2) two beams are necessary because the longer periods when the patient is not exactly in the middle make the cross-bars tilt, which seems undesirable. The uprights of the balkan beam are fastened to the head and foot of the bed as shown. An earlier model [7] used an ordinary bed-frame, but improved access to the head can be gained by using two "foot-ends" instead of a head and a foot-end. The style of bed-frame with extra bracing seems to be the best for this purpose. To avoid crossing the cords the weights for the head end should be in the middle and the hip ones next to them. To obtain the greatest tilt the bed should be placed as low as it is desired

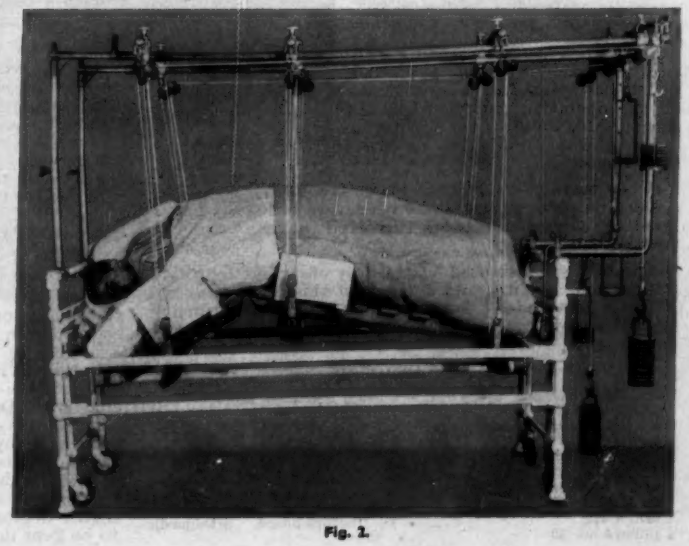

Fig. 2.

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to have it and the weights fastened as high as possible so that they do not reach the ground before effecting all desired changes of position. Triangular blocks of wood, 11 in. wide, 6 in. high, and 6 in. deep, should be fastened on each side of the fracture-board at the level of the hips so that the middle of the mattress forms a gutter and the patient's hips do not slide sideways when lateral tilt is applied. In an emergency sandbags will help to form this gutter. Once the fracture-board has been articulated, assembly takes less than an hour.

SUSPENDED BED IN USE

The fracture-board is pushed down on to the bed-frame, one middle pulley system is unfastened, and the patient is placed on the bed. After reconnecting it will be found extremely easy to tilt the patient head up or head down, with or without sideways tilt, at will. Since the mattress is guttered at the hips, sideways tilting requires no pillows to prevent the patient from rolling off, and if the shoulders slide downwards, this only further increases the effective tilt. The patient can immediately be put into any position required by emergency. The articulation of the bed at the hips allows extreme head-down tilting without raising the legs, thus minimising the hydraulic pressure in the head. (Œdema of the face and hoarseness may develop in volunteers after an hour in the head-down position with the legs in line with the trunk.[1]) The tilting routine used has usually been as follows: head up, right side up; head down, right side up; head down, left side up; head up, left side up. This produces a change from one side to the other and from one longitudinal tilt to the other every hour. But other schemes can be used for different conditions.

The suspended bed is welcomed by the nurses because it diminishes the handling of these patients, who can sleep undisturbed. Since the bed is merely pushed into position from the side it is much easier, quicker, and smoother to operate than beds which rely on screw devices. In spite of the pulley cords access to the patient is adequate, and this bed can be used with either an oxygen tent or a steam tent. If greater access is desired, the fracture-boards can be pushed down on to the bed framework and the necessary pulley systems unhooked. Without temporarily shortening the cords maximal head-down tilt is about 35° and simultaneous lateral tilt 30°, giving an oblique tilt of 45°.

USES OF SUSPENDED BED

Beds of this type have been used for three years with entirely satisfactory results. One bed is now kept permanently made up. These beds have been used mainly for bronchitis and atelectasis in patients with respiratory weakness following poliomyelitis, particularly when secretions are profuse.

Such a bed has been used for a girl, aged 12 years, with a vital capacity of 350 c.cm. (15% of expected) who underwent spinal fusion for very severe scoliosis and had no postoperative complications. She was tilted from side to side (and at times slightly head up or head down) in her distraction jacket half-hourly both before and after operation.

A bed was also used (at the Sister's request) for treating a 15-stone patient admitted with severe bedsores, and it greatly reduced the work involved in changing his position frequently.

The bed was also used successfully elsewhere for acute bulbar poliomyelitis. As a result of this experience the "double-foot-ended" type was developed. For ordinary use this is not absolutely essential but may be found more convenient.

PARTS REQUIRED

'Hoskins' overhead beam 'Y 2890'
2 head-end supports no. 1 (complete)
2 foot-end supports no. 18 (complete)
2 overhead beams no. 7
3 arms 30 in. no. 12A
1 arm 4 ft.
4 pulleys no. 30
2 pulleys no. 33
18 pulleys no. 29
8 arm adjusting no. 16
2 fittings to foot-end support no. 20
6 beam hooks no. 32
1 wrench no. 28
6 weight holders (2 lb.)
1-lb. weights
1 hank no. 9 blind cord
12 fittings with ring no. 15
6 U-loops 2½ × 2 in. threaded 1 in. (loops from no. 15 can be used)
1 fracture-board, orthopædic type
2 1½-in. back-flap hinges
12 ft. × 3 in. × 1 in. timber

Hoskins and Sewell also make a bed frame especially for this bed which is no. Y3379.

My thanks are due to the consultants of the Royal National Orthopædic Hospital, Stanmore, for allowing me to treat their patients by this method, and particularly to Dr. F. Harwood Stevenson for his encouragement; to Mr. A. C. Forrest, carpenter-splint maker to the hospital for his unfailing help; and to Mr. R. J. Whitley, of the department of medical photography at the Institute of Orthopædics.

External Scientific Staff,
Medical Research Council,
Institute of Orthopædics

A. B. KINNIER WILSON
M.A., M.B. Camb., M.R.C.P., D.P.M.

Reviews of Books

Surgery

J. G. ALLEN, M.D., professor of surgery, University of Chicago; H. N. HARKINS, M.D., PH.D., professor of surgery, University of Washington School of Medicine; C. A. MOYER, M.D., Bixby professor of surgery, Washington University School of Medicine, St. Louis; J. E. RHOADS, M.D., D.SC., professor of surgery, University of Pennsylvania School of Medicine and Graduate School of Medicine, Pennsylvania. London: Pitman Medical Publishing Co. 1957. Pp. 1495. £5 10s.

IN this country there is often a distinction between the best contemporary practice and what is regarded as suitable for the student's textbook: the tender mind must not be contaminated with recent advances (which may be referred to only in small print); signs and differential diagnosis must predominate; diseases almost extinct must be honoured because of their antiquity; bibliographies must be omitted lest they might deflect too many young feet to the library. Fortunately for the future of medicine the modern student is more aware of contemporary needs than some of his teachers, and in this book he will find an answer to those needs. The four editors and twenty-eight contributors treat him as a mature adult and present to him those matters which are of importance today, both in his practice and in his role as a scientist.

Thus, the new developments in homografts, together with the significance of agammaglobulinæmia, Medawar's work, and the place of corticotrophin, appear in the section on wound healing. The chapter on blood-transfusion is a marvel of condensation and completeness: the Rh system, the Coombs test, abnormal reactions common and obscure, platelet and fibrinogen transfusions, and plasma substitutes are all there. Radiation injury is included in the section on wounds.

These few examples indicate the width and scope of this work, which presents both well-trodden ground and new advances intelligibly, even readably, arguing from principles, with ample references to the appropriate sources. The British student who uses this book effectively will become a menace to examiners; and it will reassure teachers that progress is in fact being made in one branch of medical education, for it is an intelligent man's guide to surgery.

Everyday Pædiatrics

B. GANS, M.D., M.R.C.P.; L. I. NORMAN, M.B. London: Faber & Faber. 1957. Pp. 216. 12s. 6d.

THIS short dogmatic "do-it-yourself" handbook is for the general practitioner. It contains much that is useful, especially in the part dealing with the health services available to deprived and handicapped children. The selection of material in the clinical section is good, but many of the dogmatic assertions should be qualified and some corrected. Space could be made for this by removing such sentences as "he should prolong the patency of his coronaries by sending the child to hospital, and risk a scathing letter from the houseman."

The warning in the preface that the book is dangerous to medical students and useless to those working for higher degrees should be taken seriously: this is a book to be kept in the doctor's car, not his library.

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Anaesthesia, 1957, 12, 174.

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see *Lancet, 1957, i, 128.*

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see *Lancet, 1957, i, 213.*

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THE LANCET

LONDON: SATURDAY, OCTOBER 26, 1957

Bacteria and Influenza

MORE than sixty years have elapsed since PFEIFFER first described the "influenza bacillus," and yet we still have no clear understanding of the exact part played by *Hæmophilus influenzæ*, as it is now called, in the ætiology of this disease. PFEIFFER'S original belief that this organism was the sole cause of influenza was finally dispelled by the isolation of the influenza virus in 1933,[1] but this event by no means absolved *H. influenzæ* from all blame. Indeed, as we have recently been reminded by MCLEOD [2] and MCNEE,[3] after the pandemic of 1918–19, when there was much speculation that a virus was the true cause, "the majority of competent bacteriologists were convinced that *Hæmophilus influenzæ* had played an important part." [2] Further, in July of this year, HARLEY [4] reported an increase in the frequency with which large numbers of *H. influenzæ* were being isolated from throat-swabs, and he pointed out that such an increase had been observed just before the major influenza outbreaks of 1918.

LEWIS and SHOPE [5] demonstrated that both a virus and a hæmophilus, *H. influenzæ suis*, are necessary for the evolution of swine influenza (the counterpart in pigs of the human disease): experimentally neither the virus nor the hæmophilus alone is capable of inducing the full clinical picture. No such close relationship has so far been demonstrated in man, and it seems safe to conclude that if a true symbiosis in fact exists it would have been recognised by now. Even so, the close association between *H. influenzæ* and influenza, and the remarkable protection against influenza apparently conferred in 1918 by large doses of a vaccine containing *H. influenzæ* only,[6] clearly support the plea of MCLEOD and MCNEE that further consideration should be given to the role of this bacterial organism. A clue may perhaps be found in HIMMELWEIT'S [7] work, which suggested that both *H. influenzæ* and the pneumococcus, but not staphylococci and streptococci, could prepare the way for the virus's attack by changing the mucin that normally obstructs its entry into the bronchial mucosa.

Whatever may be its part in the onset of influenza, as a secondary invader *H. influenzæ* ranks in importance with a number of other bacterial pathogens, notably the pneumococcus, *Staphylococcus aureus*, and the group-A hæmolytic streptococcus. Any of these organisms is capable of adding pneumonia to influenza—sometimes a fulminating and rapidly fatal pneumonia—and a knowledge of the infecting organism and its qualities is clearly of the first importance in selecting a suitable antibiotic to suppress it. Herein lies a grave difficulty—a solution to which will become of formidable urgency if the present epidemic develops on the lines of the pandemic of 1918–19 (and the figures given on p. 841 are disquieting). Apart from the impossibility of testing the antibiotic-sensitivity of the bacterial flora of more than a small fraction of the affected population, the onset of pneumonia may be so sudden and catastrophic that *immediate* chemotherapy is essential, whether scientifically administered or not. In these fulminating pneumonias, one of the broad-spectrum antibiotics must for choice be given intravenously, though intramuscular penicillin and streptomycin may be an acceptable alternative. Were the attacking organisms limited to *H. influenzæ*, the pneumococcus, and the hæmolytic streptococcus, either of these measures would probably suffice; but the shadow of the antibiotic-resistant staphylococcus is a darker threat, and fatal infections caused by it have been reported during the recent epidemic in Australia [8] and during a 1955 epidemic in Germany.[9] Also some fatal pneumonias in this country in recent weeks have in all probability been due to the malign combination of influenza virus and staphylococcus. Outside hospital communities, and still more so outside big centres of population, where opportunities for cross-infection are less, most staphylococci may still retain their "natural" pattern of sensitivity to the common antibiotics; but, in the absence of a sensitivity test, little reliance should in present circumstances be placed on this geographical distinction, and "blind" chemotherapy, should it become necessary, must take account of the possibility that a resistant staphylococcus is the invader. It may well be that we shall now reap the rewards of the part-successful campaign to reserve erythromycin and novobiocin for such an emergency. These are the two antibiotics to which the present-day *Staph. aureus* in this country is most likely to be sensitive, and one or other should be ready for instant use in serious pneumonia. When the crisis is past, however, the drug should be withdrawn, lest resistant strains should be bred and transmitted to others.

The pneumococcus and hæmolytic streptococcus are also sensitive to erythromycin and novobiocin, but unfortunately *H. influenzæ* is usually not. And this is the real dilemma in the chemotherapy of fulminating pneumonia arising in influenza—whether to aim the attack primarily against *H. influenzæ*, using the tetracyclines or chloramphenicol, or against *Staph. aureus* with erythromycin or novobiocin. Perhaps, since the staphylococcus *may* be sensitive to the tetracyclines or chloramphenicol, it is reasonable to try these first, especially in the not so acutely ill patient in whom there is time to observe the effect of treatment and to change it if there is no response. But some patients may die within twenty-four hours if not effectively treated, and the best course may be to use a combination of antibiotics from both groups. Another possible defence—the use of cortisone—

1. Smith, W., Andrewes, C. H., Laidlaw, P. P. *Lancet*, 1933, ii, 66.
2. McLeod, J. W. *ibid.* 1957, ii, 639.
3. McNee, J. W. *ibid.* p. 693.
4. Harley, D. *ibid.* p. 191.
5. Lewis, P. A., Shope, R. E. *J. exp. Med.* 1931, **54**, 361.
6. Duval, C. W., Harris, W. H. *J. Immunol.* 1919, **4**, 317.
7. Himmelweit, F. *Trans. med. Soc. Lond.* 1947–49, **65**, 438.
8. *Med. J. Aust.* 1957, ii, 268.
9. Bretherton, R. V. *Ibid*, p. 338.

is the subject of a letter on p. 845 by Dr. PLAZA DE LOS REYES and his colleagues, who tell how cortisone was used in conjunction with antibiotics in patients desperately ill during the recent epidemic in Chile.

What of the possibilities of mass active immunisation against the agents responsible for influenza and its complications? The problems are enormous: they involve not only the production of huge quantities of vaccine but also the difficulty of determining the desirable antigenic properties to put into it—properties which can seldom be predicted long in advance of the epidemic. The dominant antigen of the influenza virus itself seems to change from one epidemic to another; so the preparation of a suitable vaccine cannot begin until the epidemic has started and the virus has been isolated. In the present outbreak this country was fortunate in having a breathing-space between the start of the epidemic in Asia and its spread to Europe in which to prepare a vaccine; but even so the immunisation of a large proportion of the population has not been feasible. And it has yet to be seen whether the virus vaccine confers any substantial degree of immunity.

The matter of bacterial vaccines is rather different. With the virus it is safe to say that, once the strain is known, this strain and this strain only will be associated with the epidemic everywhere; but the bacterial invaders will differ in different communities and in different individuals within the same community. In some communities there may be, as it were, a secondary epidemic of bacterial infection superimposed upon the primary influenza epidemic. Elsewhere, however, no one bacterial invader may predominate, and the nature of the secondary infection may depend on the flora in each patient's respiratory tract, or that of his contacts, at the time he gets influenza. It is sometimes possible to forecast susceptibility to secondary infection by a particular organism in a given individual (for example, the chronic bronchitic is very likely to be infected with *H. influenzæ*, which is a common inhabitant of his respiratory tract); but this does little to simplify the problems of immunisation against all possible secondary invaders. Another complication is that many different antigenic types are found among the bacteria concerned, and, even though one type may evoke antibodies to another type, it is by no means certain that the mere presence of antibodies means resistance to infection.

At first sight, therefore, mass immunisation against the bacteria complicating influenza seems impracticable; and yet the results claimed by DUVAL and HARRIS,[6] and emphasised by MCLEOD,[2] are so striking that they must not be disregarded. In 342 volunteers who received the full course of vaccine (3 doses at three-day intervals) there were no cases; in 238 refusing inoculation there were 93 cases and 27 pneumonias. Of all the 3072 inoculated, whether they had one dose or more, only 3% contracted influenza, compared with 41% of 866 not inoculated. DUVAL and HARRIS'S vaccine contained *H. influenzæ* only, yet it seemed to give substantial protection in a small trial in the circumstance of 1918. Perhaps the effects were non-specific—or perhaps not. At all events, further investigation of the rôle of bacteria, especially *H. influenzæ*, in influenza is urgently needed.

A New Look for Proctology

WHERE craftsmanship is predominant there is ever a tendency for the subject to remain static. This is particularly true of proctology. In this small but important field problems which might exercise the intellect are few; but shibboleths have abounded, descriptive errors have flourished, the anatomy has remained obscure, and surgical techniques have been pursued without question. Hilton's white line provides an excellent example of the gerontocracy of the master-craftsman.[1] In 1853 HILTON declared that

> "A white line which in the living subject any surgeon can recognize shows the junction of the skin and the mucuous membrane. That white line corresponds exactly with the linear interval between the external and internal sphincter muscle. It is an important landmark, exact and truthful, so that it can be relied upon . . ."

This description was given such credence that most of those who have subsequently described anal anatomy have attempted to find some place for the line, even though it does not appear to exist. It is profitless to speculate whether the dentate line at the lower end of the anal valves was intended, or the junction of true with modified skin at the lower border of the pecten; as EWING has suggested, it is better that the term be forgotten.[2]

In a thoughtful review, suitably entitled Landmarks and Legends of the Anal Canal, FOWLER [3] has indicted also the pecten band, the anal intermuscular septum, and the corrugator cutis ani muscle. The breeze of revolution is in the air, EISENHAMMER [4] having fired one of the early shots by showing that what was universally accepted as the external anal sphincter [5] is in fact the internal—an observation which later drew support from St. Mark's Hospital itself.[6] But will a change in the techniques of anal surgery ensue? For almost a surgical generation it has been de rigueur to operate with the patient in the lithotomy position, though the "jack-knife" position, widely adopted in America, has many advantages. The patient is placed face downwards on the table, which is then "broken" so that the buttocks and anal canal form the apex of a pyramid. It is true that this position shares the disadvantages inherent in the Trendelenburg position [7], but the slope downwards to the head need not be steep. The abdominal wall must be raised from the surface of the table by a sandbag judiciously placed beneath the iliac crests to permit free movement of the diaphragm, though this is less important if caudal anæsthesia is used in preference to general anæsthesia. In this position it is possible to pass a sigmoidoscope with ease and without insufflation (insufflation is not without danger in the unconscious patient), before proceeding to the main operation; in the lithotomy position the rectosigmoid junction can seldom be negotiated by the sigmoidoscope. In contrast to the conditions with the lithotomy position, the operative area is not congested, the anatomy is not obscured by a constant ooze, and blood-loss is reduced.

1. Churchill, E. D. Centennial Lecture in Surgery, Faculty of Medicine, Queen's University, Kingston, Ontario, 1954.
2. Ewing, M. R. *Proc. R. Soc. Med.* 1954, **47**, 525.
3. Fowler, R. *Aust. N.Z. J. Surg.* 1957, **27**, 1.
4. Eisenhammer, S. *S. Afr. med. J.* 1951, **25**, 486; *ibid.* 1953, **27**, 666; *Lancet*, 1955, ii, 1248.
5. Milligan, E. J. C., Morgan, C. N., Jones, L. E., Officer, R. *Lancet*, 1937, ii, 1119.
6. Goligher, J. C., Leacock, A. G., Brossy, J. J. *Brit. J. Surg.* 1955, **43**, 51.
7. Inglis, J. M., Brooke, B. N. *Brit. med. J.* 1956, ii, 343. See also *Lancet*, 1955, i, 1208.

There is need to develop techniques which are less mutilating—methods that are unassociated with discomfort in convalescence and which provide speedy healing. The " back-cut " has become a sine-qua-non of all anal operations, on the ground that a raw surface within the anal canal requires a gutter to the surface at the anal verge to ensure drainage. The method has served well in terms of ultimate cure but has accounted for much discomfort. Further, the square inch of perianal skin thus removed is an extravagant waste of normal tissue and exposure of raw surfaces in a highly sensitive area. But sometimes—when, for example, removing piles—it is neither necessary to remove perianal skin nor to leave unsutured the raw areas within the anal canal. J. A. FERGUSON has reported few complications and little morbidity in 8086 patients whose hæmorrhoidectomy wounds were completely closed with catgut.[8] In the semiclosed method the wound edges are approximated by subcuticular sutures, and this has the advantage of allowing possible serous collections to escape rather than spread submucosally. Nor is it necessary to protect such procedures with chemotherapeutic cover, as is commonly advocated.[9] In this country PARKS has described a method of submucosal excision of piles whereby no epithelium is lost and the wound edges fall into apposition without suture, though the mucosa may need to be held in place by one stitch after excision of prolapsed piles.[10] The advantages of these methods are considerable, since with them postoperative pain is less and the patient returns to work earlier—after a fortnight following PARKS' procedure. The period in hospital need be no longer than seven days and may be shorter—a substantial gain when the numbers on surgical waiting-lists are taken into account. In operations for fissure or fistula preexisting infection complicates the problem of ensuring epithelial coverage, but this can be achieved with a little ingenuity.[8] Thought on these lines may provide the intellectual breeze required to blow anal surgery and its attendant craftsmen out of the doldrums.

8. See *Lancet*, 1957, i, 1023.

9. Turell, R. Treatment in Proctology. Baltimore, 1949.
10. Parks, A. G. *Brit. J. Surg.* 1956, **43**, 23.

Annotations

A BROAD VIEW OF CANCER

EACH autumn the British Postgraduate Medical Federation begins its now familiar and famous series of lectures on the scientific basis of medicine. Designed for research-workers and specialists in training, these authoritative lectures are later given a wider audience by publishing them in book form, and the 1955–56 series has recently appeared.[1] The Federation's custom is to choose as first lecturer each year someone who is specially qualified to take a broad view, someone who can move back from the overwhelming mass of detail and from that standpoint serve as guide and encourager to those less fortunately placed. Last week Dr. Julian Huxley assumed this benevolent role, and his absorbing and comprehensive discussion of " some biological aspects of cancer " was itself a striking illustration of the force of his concluding point—that cancer research can only prosper if it is broadly based. Cancer must be a key subject for general biology, demanding the combined efforts of many experts —and, we might add, a Julian Huxley or two to piece their findings together.

Pointing to various lines of research that promised well, Dr. Huxley chose some striking examples from recent work on lower organisms. Exposure to tars and diesel fumes had produced growths in certain fungi, and here was an abundant source of material for investigation. Plant galls, in which insects had induced disorganised growths for the benefit of the insect rather than the plant, might repay further study; and the tumours evoked by applying thiocresol to the regenerating claws of hermit crabs should be reinvestigated, particularly from the point of view of growth-rate. Little is known for certain about the influence of the nervous system on human cancer, but there may be clues in some observations to which Dr. Huxley referred. Section of nerves in the cockroach had been followed by the appearance of tumours in the organs served by those nerves; and damage to the sympathetic system of guineapigs (normally very resistant to tumour formation) had led to the development of growths. Is there conceivably some connection here with Sir Heneage Ogilvie's reflections[2] on the happy man who never gets cancer.

It is sometimes said that human cancer is not inherited. Dr. Huxley pointed to the difficulties of an adequate analysis of cancer proneness in a species which is subject to many different types of cancer and exposed to such varied genetic and environmental influences. There was, however, distinct evidence of cancer proneness in man, and more comparisons between monovular and binovular twins was one way of exploring the matter further. Some racial differences were apparent in which genetic predisposition seemed to predominate: for example, the incidence of cancer of the breast in Japanese women was only a sixth of that in European women. Among the copious work on genetic influences in animal cancers, changes in tumour susceptibility had shown how apparently unrelated genes could amplify or abate the likelihood of cancer; and suitable selection in different lines of mice might delay the onset of tumour formation. The incredibly high cancer-rate in grey horses (over the age of 15 years the incidence was 80%, nearly all melanomas) was another of Dr. Huxley's suggestions for more detailed inquiry.

How near we now stand to what Dr. Huxley called the biochemical " kernel " of cancer none can confidently say; but there is no doubting that the wide " biological " nutcrackers he advocated are the ones most likely to get at it quickly.

1. See *Lancet*, Oct. 12, 1957, p. 728.
2. *Ibid*, July 6, 1957, p. 35.

A CONCEPT OF ANÆSTHESIA

ALL doctors with an interest in anæsthetics are familiar with Guedel's[1] description of four stages of general anæsthesia—analgesia, delirium or excitement, surgical anæsthesia, and respiratory paralysis. Each stage is recognisable from the typical pattern of signs, largely associated with respiration. Guedel's classification was devised at a time when ether was the commonest anæsthetic, and in the complete sense it is applicable only to this and similar agents. Newer agents do not respect such an orderly sequence: the capacity of intravenous thiobarbiturates severely to depress respiration and circulation in light anæsthesia, and of muscle relaxants to simulate most of the signs of anæsthesia yet produce no anæsthesia, are well known. Moreover with combinations of drugs the idea of anæsthetic depth is invalid, though there is still need for a guide to the degree of anæsthesia. If the orthodox stages are to be retained, they must be restated in modern terms.[2 3] Analgesia is an essential feature of the first stage, but this is also characterised by

1. Guedel, A. E. Inhalation Anesthesia. New York, 1937.
2. Mushin, W. W. *Anæsthesia*, 1948, **3**, 154.
3. Laycock, J. D. *Ibid*, 1953, **8**, 15.

consciousness and disorientation; the first stage merges into the second when unconsciousness supervenes, often with much reflex activity. But both these stages may be lost when anæsthesia is induced rapidly. It is in the third stage, when the reflexes are depressed, that surgery is performed. The fourth stage represents overdosage.

There is a case for dividing general anæsthesia into four parts—sensory block, motor block, block of reflexes (referring to circulatory, respiratory, and gastro-intestinal reflexes), and mental block.[4] In this context the Greek word "nothria", which can be defined as numbness, motor inactivity, and mental sluggishness, has been recommended as an alternative to "anæsthesia," which strictly refers to sensory block.

Each of these four components of general anæsthesia can usually be assessed from the specific and objective signs that surgical stimuli produce.

INFANT MORTALITY IN MALTA

SINCE the beginning of the century the infant-mortality rate in England and Wales has been reduced by about five-sixths. In Malta, according to Dr. Camilleri,[5] the reduction is very similar, although at a higher level—from about 240 per 1000 live births in 1900 to 42·6 in 1956. In Malta, as elsewhere, the decline has been more obvious after the first month of life, and attention is being attracted to the relative lag in the stillbirth-rate and the death-rate in the neonatal period. The infant mortality in general was dropping before the 1939 war; but in Malta, as in England, there was a very steep decline in the quinquennium 1945–49. Gastro-enteritis is still a grave problem in Malta, accounting for over a quarter of the infant deaths. This proportion is only slightly lower than at the turn of the century, but it is significantly lower in the neonatal period where the main killing disorders are listed as congenital debility, marasmus, and prematurity. In the neonatal period 80% of the deaths are in the first week.

The perinatal mortality—i.e., the stillbirth-rate and neonatal mortality combined—is now generally accepted as the joint concern of obstetrics and pædiatrics, with the midwifery and nursing services playing an important part. The decline in the death-rate from prematurity in England and Wales can fairly be ascribed largely to the greater attention paid to the special care of prematures since the Ministry of Health circular of 1944[6] and the joint report of the Royal College of Obstetricians and Gynæcologists and the British Pædiatric Association in 1949.[7] The latter covered more ground but everywhere emphasised the standard of nursing care for the new-born. It suggested, for example, that senior nurses in charge of a premature-baby unit should have the certificate of Sick Children's Nurses and "should have had special training with immature babies."

Reviewing the years since the war, Camilleri reports that the proportion of neonatal deaths shows only slight changes for the major disorders discussed. Congenital malformations account for about 5% of total deaths in the first month, birth injuries for 11–12%, pulmonary infections for about 2½%, with asphyxia and atelectasis reduced from over 30% to the middle 20s. Rhesus incompatability is not separately listed but the numbers are probably small.

The health authorities and the medical profession in Malta have achieved a great deal in saving infant life; but what Camilleri calls "a sorry tale" in relation to the neonatal period deserves close study. An improved service of nursing care for the newborn who are suffering from some of the disturbances discussed here, at hospital or at home, would probably yield good results.

4. Woodbridge, P. D. *Anesthesiology*, 1957, **18**, 536.
5. Camilleri, A. P. *Med. Offr*, Sept. 27, 1957, p. 181.
6. Ministry of Health circular 20/44.
7. *Rep. publ. Hlth med. Subj.* 1949. no. 9.

CYCLOSERINE

CYCLOSERINE appeared at first to be a promising anti-tuberculosis drug, for it can be given by mouth. Unfortunately, the early reports of frequent toxic manifestations have been confirmed; and it seems unlikely to have much value except in the occasional difficult case. Walker and Murdoch[1] have reported toxic reactions in no less than 10 of 13 patients treated with 0·5–1·5 g. daily. The patients became drowsy and had personality changes or involuntary twitching; but all symptoms disappeared quickly when the drug was stopped. In four of the patients, all of whom had advanced disease with sufficient lung damage to cause right ventricular hypertrophy, congestive heart-failure developed; and three of them died. Walker and Murdoch suggest that this may also have been a complication of cycloserine. There are two other reports of heart-failure during treatment,[2 3] though in neither was the drug incriminated. Walker and Murdoch suggest that cycloserine should be given initially in 0·25 g. doses twice daily—a dosage that appears to be virtually non-toxic—and the dosage slowly increased. Certainly it seems wise to restrict the use of this drug to patients in hospital under careful supervision.

STRAPPING FOR PLEURAL PAIN

IT is now generally believed that pleural pain is caused by inspiratory stretching of tense, swollen, parietal pleura.[4] Strapping the affected hemithorax at the end of deep expiration to limit its movement during inspiration seems therefore rational, and it is often efficacious. But Carton and Sepp[5] now suggest that the explanation of the good results from this measure is not so obvious as it seems.

By means of bronchospirometry they measured, before and after strapping the hemithorax in the usual way, the vital capacities and the minute volumes of the individual lungs of 8 patients with moderately advanced or far-advanced pulmonary tuberculosis. The sum of the vital capacities of the lungs was reduced in 7 of the 8 patients, but in only 5 of the 7 was the decrease proportionately greater on the strapped side, and even in these the reduction was surprisingly slight. 6 of the 8 patients showed a greater proportionate drop in minute volume on the strapped side, but again the differences were not striking. They then measured the vital capacities and maximum breathing capacities (both lungs together) of 9 healthy male medical students before and after strapping one hemithorax. Strapping reduced vital capacities by an average of 8% and maximum breathing capacities by an average of 11%. As strapping one hemithorax seemed to have comparatively little effect on ventilation, and it had been suggested that alteration in movement of the chest wall may be compensated for by changed excursion of the diaphragm, chest radiographs of 5 normal males were taken at full inspiration and at full expiration before and after the application of strapping. The changes in diaphragmatic excursion were slight (generally 1 cm. or less) and strapping seemed to have no specific effect on the movement of the isolateral or contralateral leaf of the diaphragm. Lastly, the efficacy of strapping for the relief of pleural pain was tested in 7 patients with fibrinous pleurisy. The degree of pain present was assessed by questioning, and after a control period strapping was applied to the side opposite the pain, left in place for two hours, and removed after the degree of pain had again been estimated. The process was then repeated with the strapping applied to the painful side. In all 7 cases strapping the side opposite the pain

1. Walker, W. C., Murdoch, J. McC. *Tubercle, Lond.* 1957, **38**, 297.
2. Nair, K. G. S., Epstein, I. G., Baron, H., Mulinos, M. G. Antibiotics Annual, 1955–56; p. 136.
3. Lester, W., Solomon, A., Reimann, A. F., Shulruff, E., Berg, G. S. *Amer. Rev. Tuberc.* 1956, **74**, 121.
4. Bray, H. A. *Amer. Rev. Tuberc.* 1926, **13**, 14.
5. Carton, R. W., Sepp, E. *Ibid*, 1957, **76**, 167.

gave some relief, and in 2 it gave greater relief than strapping the painful side.

Why, if strapping one hemithorax restricts its movement little more than that of the other, and does not greatly limit the movement of the thorax as a whole, does it often succeed in relieving pleural pain? The healthy male students tested in this investigation volunteered the information that the strapping produced a feeling of tightness long before the extreme of inspiratory movement was reached, and Carton and Sepp suggest that this sensation of discomfort may give the patient with pleurisy a timely warning to limit his inspiratory effort. They point out also that, in view of the comparatively equal ventilation of the lungs despite the application of strapping to one side of the chest, there seem to be no grounds for fearing the development of collapse and pneumonia in the isolateral lung.

MERALGIA PARÆSTHETICA

THE term "meralgia paræsthetica" is applied to a sensory disturbance in the distribution of the lateral cutaneous nerve of the thigh. The area of skin involved is generally elliptical,,and is situated on the anterolateral aspect of the thigh. The paræsthesiæ consist in numbness, itching, pins and needles, pain, undue sensitivity, or burning. There is often objective sensory impairment, but its extent is usually much less than that of the paræsthesiæ. In diagnosis the essential points are the distribution of the sensory loss and the absence of abnormalities of the motor system and of the tendon and plantar reflexes. Before the diagnosis is made it is important to be clear on these points, for intra-abdominal disease involving the lumbar plexus, or disease of the spinal cord or cauda equina, can cause a somewhat similar picture.

The clinical features of this disorder are already well documented, and the intention of Stevens's study [1] of 42 patients is to determine the incidence and course of the disorder. The patients were of widely different ages, the mean being about 40 years; and, as most workers have found, most were male. Of the 42 patients only 16 were referred because of the paræsthesiæ; in the remaining 26 meralgia paræsthetica was discovered as an incidental finding in response to routine questioning or sensory examination. Stevens considers that it is not an uncommon disorder, but that in few patients are the symptoms severe enough to make them seek medical advice.

Many views have been expressed on the pathology of the disorder. A widely held opinion is that during movements of the leg the nerve is compressed as it pierces the fascia lata about four inches below the anterior superior iliac spine; but it has not been possible to show that either flexion or extension of the leg can do this. It seems more probable that the site of the lesion is at the point where the nerve passes from the abdomen into the thigh.[2] It normally passes deep to the lateral end of Poupart's ligament and at this point is abruptly angulated, the angle varying as the hip is flexed and extended. Occasionally, however, it passes over the crest of the ilium lateral to the anterior superior iliac spine.[2] Stevens dissected 47 cadavers and confirmed the variability of the course of the nerve. He was unable to say that any particular variation exposed the nerve especially to trauma, but it is reasonable to suppose that if the investigation could be repeated on the bodies of those who have suffered from meralgia paræsthetica during life an anatomical basis would be found for their symptoms.

Treatment has generally consisted in surgical freeing of the nerve at the point where it is believed to be compressed. As this point is not known, it is not surprising that the results of operation are equivocal. Stevens has treated all his patients conservatively, assuring them that their complaint is not uncommon and is benign.

Meralgia paræsthetica is only one example of a neuropathy of a minor peripheral nerve which is of limited importance in itself but which can pose an important diagnostic problem. Other examples include compression of the median nerve in the carpal tunnel (often with striking wasting of abductor pollicis brevis), and lesions of the terminal parts of the radial nerve with severe wasting of most of the small muscles of the hand. These disorders can be confused with conditions which differ widely both in treatment and prognosis; and, since they can usually be distinguished on purely clinical grounds, they illustrate again the value of careful physical examination and interpretation of the result in the light of neurological anatomy.

1. Stevens, H. *Arch. Neurol. Psychiat.* 1957, **77**, 557.
2. Stookey, B. *J. Amer. med. Ass.* 1928, **90**, 1705.

COMPLICATIONS OF CHICKENPOX

CORRESPONDENCE in our columns [1-3] reminds us that, though varicella is usually a minor illness, in rare cases death results either from the disease itself or from some complication. Cases of disseminated chickenpox have been reported by McLachlan,[1] Nicolaides,[4] and Knyvett.[5] After three to five days, during which the disease pursued an apparently normal course, the patients' condition suddenly deteriorated, with frequent vomiting and coughing; severe shock, cyanosis, and loss of consciousness ultimately supervened and the patients soon died. The rash was not remarkable, though varying proportions of hæmorrhagic vesicles sometimes appeared. The most commonly affected organs were the lungs, liver, and spleen, where hæmorrhagic nodules could be seen with the naked eye; they were usually particularly evident beneath the pleura but were distributed widely throughout the substance of these organs. The œsophagus and intestinal tract were usually ulcerated.

Necropsy reports of the neurological conditions following varicella are few. Clinically many different neurological disorders have been diagnosed; but many patients seem to have had acute disseminated encephalomyelitis, characterised by widespread perivenous inflammatory-cell infiltration and demyelination, with general survival of nerve-cells even within inflamed regions. Lander [6] has reported a case of acute hæmorrhagic leucoencephalitis in the course of varicella. Russell [7] has pointed out that acute disseminated myeloencephalitis and acute hæmorrhagic leucoencephalitis may be variants of one pathological process.

Adrenal cortical hormones can enhance the action of various infectious agents; Haggerty and Eley [8] suggested that the course of varicella may be altered adversely when the disease is contracted during the administration of cortisone. Although they recognised that varicella in such patients usually pursued a normal course, they noted that the dermatological manifestations were occasionally so atypical as to render diagnosis difficult, and that severe illness was commoner; they collected 12 fatal cases in children under cortisone therapy for various reasons. 3 further cases have been reported by Nichols.[9] Probably these steroids have little effect on previously acquired resistance; but when the immune mechanism has not started it may be so modified as to predispose the patient to generalised spread of the disease.

1. McLachlan, I. M. *Lancet*, Sept. 7, 1957, p. 492.
2. Harrison, M. T. *Ibid*, Sept. 14, 1957, p. 542.
3. Marsh, F. *Ibid*, Sept. 21, 1957, p. 596.
4. Nicolaides, N. J. *Med. J. Aust.* 1957, i, 88.
5. Knyvett, A. F. *Ibid*, p. 91.
6. Lander, H. *J. Path. Bact.* 1955, **70**, 157.
7. Russell, D. S. *Brain*, 1955, **78**, 369.
8. Haggerty, R. J., Eley, R. C. *Pediatrics*, 1956, **18**, 160.
9. Nichols, W. W. *Amer. J. Dis. Child.* 1957, **94**, 219.

Public Health

A CLINICAL STUDY OF INFLUENZA IN THE ROYAL AIR FORCE

W. W. HOLLAND
M.B., B.Sc., Lond.
FLIGHT-LIEUTENANT, R.A.F.

As part of a study of respiratory disease in the Royal Air Force, visits have been made to certain stations at intervals throughout the summer months. Serological and virus isolation studies of cases showed no evidence of influenzal infection until the middle of August. This is an interim summary of my clinical findings in the period Aug. 14 to Oct. 2.

TABLE I—FREQUENCY OF SYMPTOMS ON ADMISSION

Symptom	%	Symptom	%
Cough	84	Nasal discharge	26
Headache	73	Fever	22
Sore throat	65	Sputum	13·5
Muscle pains	51	Hoarseness	13.5
Sweating	39	Abdominal pain	6
Blocked nose	36	Vomiting	5
Chest pain	27		

A large number of cases of influenza were seen personally during this period. The history and examination of these patients were recorded in a standardised form. The results on 170 male febrile patients, aged 15 to 45 years, seen at nine stations are analysed in this paper. These patients were seen within forty-eight hours of the onset of disease—usually within a few hours of admission to Station sick quarters or hospital. Many of these patients were also seen on recovery. Paired samples of serum were obtained from all these cases, and throat swabs for virus isolation in a certain proportion. In all nine stations influenza-A virus (Asian strain) was isolated. Serological evidence of virus-A infection has been found, so far, in 90 of these patients, who comprise a representative sample of the total. No other ætiological agent for epidemic respiratory illness has been detected during the period described.

Clinical Findings

Almost all the patients with influenza reported sick within twenty-four hours of the onset of symptoms. The onset was sudden. Temperature on admission was only slightly, if at all, raised, and rose to its maximum over the course of the first twenty-four hours. Almost always the patients complained of many symptoms. Table I shows the frequency of these. The most troublesome presenting symptoms are shown in table II.

The cough, of which most patients complained, was dry, and often associated with retrosternal chest pain.

TABLE II—MOST TROUBLESOME PRESENTING SYMPTOMS

Symptom	%	Symptom	%
Headache	32	Cough	12
Sore throat	25	Muscle pains	10

Patients with a cough usually also had a sore throat. There was no other common association. Headache, the other very common symptom, was frontal or retro-orbital. Muscular pains, which are so often associated with influenza, were recorded in only about half the patients. Abdominal pain and vomiting was rare, but when it did occur, resembled that of acute appendicitis.

Table III summarises the findings on physical examination. An almost constant finding was redness of the throat, with the posterior pharyngeal wall swollen and slightly granular. Usually the tongue was clean, and the posterior cervical lymph-glands were enlarged. Almost half the patients had pronounced conjunctivitis, which was usually bilateral. The absence of postnasal mucopus was notable, even though nasal symptoms were common, and in the acute stage there were very few signs of chest involvement.

The picture of the disease tended to be constant at any one visit to a station, but to vary both with date and place. At one recruit station all patients seen at the beginning of the epidemic (Aug. 14), had temperatures higher than 102°F and conjunctival injection; coughing was not particularly troublesome. Two weeks later, few of the new cases had fever greater than 102°F, and conjunctival injection was present in only a third. In the middle of September, 90% of patients seen at the same station had fever greater than 102°F and coughing was very troublesome. At a different recruit station, visited in August, no case seen had conjunctivitis, only a third had temperatures higher than 102°F, but coughing was present and troublesome in most of the patients seen. At a more recent visit to this latter station, coughing still remained the predominant symptom, fever higher than 102°F was present in half, and conjunctivitis was noted in three-quarters of the patients seen.

Complications

A notable feature of the outbreaks of influenza seen up to Oct. 2 was the relative paucity of complications. Most patients, at the end of a week, complained of a non-productive cough, and quite a number had non-purulent rhinitis. The fever usually did not last more than four days, and most patients were discharged within five to seven days of admission. In only 2–4% of all cases of influenza did any pneumonic complications or chest X-ray changes develop. Several cases of staphylococcal pneumonia have been seen, but there has been no death. A very frequent indication of pneumonia has been failure of the temperature to settle, or the occurrence of further "spikes" of fever. In 3 cases of pneumonia that have been seen, meningism was severe but the cerebrospinal fluid was normal. Sinusitis and otitis have been relatively common complications, hyperpyrexia (to 108°F) has been seen on two occasions; epistaxis has been seen only once or twice. 2 patients, who fainted on parade—their first symptom—had to be admitted to a plastic-surgery unit for facial repairs.

TABLE III—PHYSICAL FINDINGS

Signs		%
Temperature greater than 102°F		39
Tongue	Clean	84
	Coated	16
Throat	Red	93
	Swollen	79
	Exudate	2
Tonsillar glands	Enlarged	22
	Tender	5·3
Posterior cervical glands	Enlarged	91
	Tender	4
Voice	Normal	48
	Nasal	45
	Hoarse	7
Conjunctival injection		48
Postnasal mucopus		0·6
Signs of chest involvement		3

Discussion

In most descriptions of influenza the suddenness of onset is described. Headache and cough are usually the commonest symptoms. The frequency of the various symptoms tabulated here is about the same as that of previously reported series (Stuart-Harris, et al. 1938, Stuart-Harris 1953).

A striking feature of the illness in this series has been cleanliness of the tongue and few abnormal chest signs.

This is in contrast to many epidemics previously described (Report on the Pandemic of Influenza 1918–19 (1920), Stuart-Harris, et al. 1938, Stuart-Harris 1953).

Stuart-Harris (1953) says: "the eyes often show slight lacrymation, and the conjunctivæ are mildly suffused." Dr. Herbert French (1920) in his report on the 1918–19 pandemic does not mention conjunctivitis as being at all common. (Report on the Pandemic of Influenza 1918–19 [1920]). In the description of Asian influenza at Kuwait Guthrie et al. (1957) say: "the scleræ were usually injected." This year a striking feature of the cases seen in this study has been the pronounced conjunctival and palpebral injection. Enlargement of the posterior cervical gland has also been commoner than has previously been described.

Interesting features of this epidemic are the changing clinical picture and the observation that the incidence of illness and rapidity of spread differed widely in similar stations.

Summary

The history and physical signs in 170 cases of influenza in young men are described. The commonest symptoms were a dry cough, with restrosternal pain, headache, and sore throat. The tongue was usually clean, the posterior pharyngeal wall red and swollen, and the posterior cervical glands enlarged. Chest involvement was rare.

The pattern of the disease differs between different localities, was constant in a single locality at any one time, but changed in time.

This study is part of an investigation of respiratory disease in recruits undertaken by the Directorate of Hygiene and Research, Air Ministry, and the Epidemiological Research Laboratory, Central Public Health Laboratory, Colindale, London, N.W.9. My thanks are due to Dr. C. D. E. Taylor and Dr. P. S. Gardner, of the routine laboratory, for examining specimens; to the medical staff of the R.A.F. units for their help and cooperation, and to the Director General of Medical Services, R.A.F., for permission to publish.

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Influenza

The epidemic shows some signs of declining in the North of England, but is still increasing in all other parts of England and Wales. The number of deaths each week from respiratory disease in the 160 great towns is shown in the table.

DEATHS IN 160 GREAT TOWNS OF ENGLAND AND WALES

Week ending	Sept. 7	Sept. 14	Sept. 21	Sept. 28	Oct. 5	Oct. 12
Influenza ..	8	47	121	282	442	591
Pneumonia ..	177	245	273	418	491	571
Bronchitis ..	128	158	188	276	346	461

The number of deaths in these towns from influenza in the period Aug. 18 to Oct. 12 ranged from 27 to 35 in 1953–56: this year it was 1499. The corresponding range for pneumonia was 994–1271 in 1953–56, and this year's total is 2457.

Vaccination against influenza virus is proceeding through hospital and local health authorities. Requests for vaccine for persons not included in the official scheme should be referred to the manufacturers—Glaxo Laboratories, Ltd., and Parke, Davis & Co., Ltd.

Family doctors in the North of England report that the characteristic symptoms are headache of sudden onset, a dry throat, vomiting, and a dry cough. Nose-bleeding is common. The temperature rises at the start of the illness and subsides on the second to fourth day; occasional severe relapses are seen after the sixth day. Some local authorities have offered help to family doctors. Retail chemists report a higher demand for laxatives than for aspirin.

The Accident at Windscale

AT the beginning of this week the committee of inquiry into the mishap at the Windscale plutonium factory was still sitting. The amount of radiation at the top of the chimney of the damaged reactor was measured from a helicopter and later by 2 engineers, in protective clothing, who went up by lift. 20 workers have arrived at Windscale from another plant of the Atomic Energy Authority; it is not known whether this is because extra labour is needed or because it has been decided that workers at Windscale who may already have been exposed to extra radiation should not undertake work that may add to the dose they have received. For security reasons, trade-union representatives have not been allowed to attend the meetings of the committee of inquiry, though workers have been encouraged to give evidence.

It is likely that the damaged reactor will be written off; even before the accident the intention had been to take it out of service within a year. According to *The Times*,[1] the accident may have arisen during either an experiment or a maintenance process, neither of which is relevant to the type of reactor used to generate electric power.

Early this week there had been no change in the ban on the sale of milk around Windscale. Local farmers are to hold meetings with officials of the Ministry of Agriculture and the Atomic Energy Authority.

Safety in the Home

The large number of deaths and injuries from home accidents continues to cause concern. In Edinburgh [2] the university department of public health and social medicine, in association with the hospital consultants and health visitors, is to survey these accidents. In Camberwell [3] a scheme is planned by which hospitals and family doctors will notify accidents to the medical officer of health. In Edinburgh at the end of last year 2150 fireguards were on loan at a charge of 5*s*. a year. The loans were made through the voluntary home-safety committee, which also holds meetings to discuss the causes and prevention of home accidents. Sanitary inspectors have visited shops where heating appliances are sold, to make sure that proper guards were fitted.

Atmospheric Pollution

In a year a modern electricity-generating station may burn a million or more tons of coal and emit from its chimneys 25,000 tons of sulphur dioxide; an oil-fired station is likely to produce even more. At the fuel research station of the Department of Scientific and Industrial Research, investigations in progress aim to lessen pollution from these and other sources.[4]

A device for removing the sulphur dioxide in a useful form (by scrubbing the gas with a solution of ammonia and ammonium salts) has now reached the pilot-plant stage. Work at Sheffield University has shown that, contrary to some opinions, it is possible to produce the highest quality steel without the emission of smoke. But half the smoke discharged into the atmosphere of this country comes from domestic coal-burning, and improvements in this field are important. Solid fuel is likely to continue to be used, for neither gas nor electricity can be stored to cope with the seasonal increase in demand. Hence the importance of smokeless fuels, including varieties lately produced that can be ignited and burned easily in old-fashioned grates (of which about 12,000,000 are in use). A smaller but increasing cause of pollution is motor-vehicle exhaust gases. Research on this includes investigations of a device for completing the combustion of unburnt gases leaving the engine, and of the effects of engine conditions on the exhaust constituents.

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2. Sellar, H.E. City and Royal Burgh of Edinburgh. Annual Report of the Health Department for 1956.
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4. Department of Scientific and Industrial Research. The Investigation of Atmospheric Pollution: A Report on Observations in the Year Ended March 31, 1955. H.M. Stationery Office, 1957. Pp. 147. 5*s*. 6*d*.

The Widdicombe File

XL. PUBLISH OR BE DAMNED

DEAR PETER,

Thanks very much for the reprint. Can't pretend that I could make head or tail of it, but then, you always were one for *t*-tests and histograms. I searched in vain for a sign of your boisterous self, but I suppose that ten pages of suggestions to contributors can fillet out personality pretty efficiently. Not that I'm unimpressed by the stylised journals. And I have a tremendous respect for men who devote their lives to writing papers like the one that followed yours, "Flavinoid Pigments of Whelk Shells: XVI, Minor South American Species." My chief, a very wise man, has a generic name for articles like these. He calls them all "glucose-6-phosphate," which includes anything mentioning D.N.A., A.T.P., 5H.T., &c. There are two other main groups in his classification: "Whither?", which covers the distilled wisdom of medical elders, who have already "got their K" and appear first in the weekly journals (e.g., Whither Otorhinolaryngology ?; Clinical Pathology at the Cross Roads; Medical Education: the Prospect Before Us); and the main group that clogs 99% of current journals, "bread-and-butter".

Did it ever strike you how few dental journals there are? It might be interesting to correlate man-verbiage in the seller's market of dentistry with the registrar-ridden buyer's market of medicine. Let's face it, we must publish or be damned. So often we have seen it: the brilliant, prolific young senior registrar becomes the brilliant young consultant, brilliant and mute. And fair enough.

But these things don't worry you now, since you took the medical equivalent of the veil. I often imagine you in your university cell, contemplating the Significance of D.N.A., disturbed only by the gentle whine of the ultracentrifuge. Whether you like it or not, however, you are certainly making a name for yourself. Hardly a week goes by without some reference in a leading article to the fundamental work of Davey et al. And there's the rub. Some are born great; others, "et al." Bad enough for me, but George Whiddon really feels desperate about it. He spends his days searching feverishly for collaborators beginning with X, Y, or Z, and would change his name to Aadvark, were it not for the confusion it would cause his referees. I'm afraid he's fated to Cobbleigh et al.—Uncle Tom's cousin is his chief, who sometimes glances at the proofs, and Hawke, Jr., our pathologist, who comes in on everything, is the alter al.

I feel sorry for George. A first-class doctor and a first-class teacher, he just hasn't got a research brain. With infinite pains, he recently wrote up "Strangulated Nuciform Sac: Case-Report with a Review of the Literature," which so wilted during its anabasis that he had to have it retyped. After spending a fortune on postage, he eventually managed to place it in an obscure American publication with the titles on the fifteenth page buried in the patent-medicine adverts.

The shelves at the Royal Society of Medicine groan under the weight of those backwoods American journals. I always find that they are filled with contributions from all those Veterans Hospitals. ("The following members of our staff, initialed below, would be pleased to have three reprints of your paper.")

It's easier to write more papers quicker in America. My chief swears that he has seen five papers by the same five collaborators in five separate journals, and the only difference between them lies in the order of the names at the top. Still, they have their own troubles. They get paid, almost literally, by the yard.

I wonder how they organise these things behind the Iron Curtain? (I have a bit of a soft spot for them, because they always call me "Prof. Dr." in their requests for reprints.) Must ask George Whiddon—he always quotes at least two *Akad. Nauk. S.S.R.*'s in his papers, as a ploy, although we've told him it's dangerous; he hasn't yet paid his ritual visit to the States.

Did you know that there were 5000 medical journals in 1956 and the number increases annually by about 100?

I don't know the answer—or do I? For I read somewhere that in Utopia every person is given a silver tablet at birth, on which to inscribe his writings. When the tablet is full—that's the lot. And old George needn't think that he can buy any on the black market from happy family doctors. They'll want all the space they can get to write those jolly letters about the College.

YOURS,
BILL GURNEY.

Special Articles

JUBILEE DINNER OF R.S.M.

Tribute to Lord Nuffield

Viscount Nuffield, whose 80th birthday was on Oct. 10, received an ovation from a gathering of some 500 people at the dinner held in London last week to celebrate the 50th jubilee of the foundation of the Royal Society of Medicine.

Sir Clement Price Thomas, the president, conferring the society's honorary fellowship upon him, expressed admiration for the way in which Lord Nuffield arranged the Trusts he has created for medical and other purposes, and said that the medical profession owes him a great deal. In reply, Lord Nuffield told how in 1912 he became acquainted with Sir William Osler, to whose diagnosis he owed his presence at the dinner. Thereafter, he had started with orthopædics and moved on through various sections of medicine which were cinderellas. "It has given me the greatest pleasure to do what I have been able to do."

The President replied to Lord Evershed's toast of The Society. Its affairs, he said, were in good health; and he spoke of the unremitting care given to all of them by the secretary, Mr. R. T. Hewitt.

When abroad, Sir Clement had been impressed by the high standing of British medicine, which rested on individual service to the community; and he felt that, especially in days when there was a tendency towards levelling of standards, the value of any voluntary institution depended on this sense of service. The society had opened its doors to people who were concerned with medicine though not medically qualified. Also it had 1500 overseas members. The council had now decided to form a new group of "affiliates," in the U.S.A. and elsewhere, in the hope of promoting interchange of knowledge and international good will.

As a profession doctors were well situated for international contacts: they had only to be in a country for a few minutes in order to make friends. They could be ambassadors of their own country, and also—even more important—ambassadors of the countries they had visited.

He hoped that the affiliates from abroad would not only widen our horizons but receive something useful. The society had the best medical library in Europe and perhaps the best library of any private institution in the world. Though the Government were unable to help in its enlargement, the Postmaster General had promised that the society should later have part of the Western District post-office, if able to take it. He had hopes of the creation of a *domus medicus* which could accommodate foreign affiliates and guests from abroad.

Mr. Derek Walker-Smith, Minister of Health, and Lord Dovercourt replied to the toast of The Guests, proposed by Mr. Terence Cawthorne. On behalf of the society, the President presented specially bound copies of *Sidelights on the History of Medicine* to Sir Zachary Cope, its editor, and to Dr. Browne Kutschbach on her retirement from editorship of the *Proceedings*.

Medicine and the Law

Hospitals are Crown Property

A SERIOUS smoke nuisance had existed for upwards of seven years, owing to the chimney of a hospital emitting black smoke. The hospital had vested in the Minister of Health under the National Health Service Act, 1946, and on July 12, 1955, the local authority served on the hospital management committee a notice under the Public Health Act, 1936, to abate the nuisance. On March 1, 1957, the local authority issued a complaint and applied that the committee be summoned to show cause why an order should not be made requiring them to comply with the provisions of the abatement notice. Before the justices the committee took the preliminary point that the justices had no jurisdiction to hear the case, on the grounds that the hospital was Crown property occupied for the public service of the Crown, and the Public Health Act, 1936, did not bind the Crown, and that the local authority should have followed the procedure set forth in section 106 of the Act (which provides that "if it appears to a local authority that a smoke nuisance . . . exists on any premises occupied for the public service of the Crown they shall report the circumstances to the appropriate Government department"). The justices considered that they had jurisdiction and ordered the committee to execute all works necessary to abate the nuisance. The committee appealed.

The LORD CHIEF JUSTICE, giving judgment, said that it was with some regret that he had come to the conclusion that the appeal would have to be allowed. Had the hospital not been transferred to the Minister but remained a voluntary or municipal hospital, the cheap, quick, and simple procedure provided by the Public Health Act, 1936, for the abatement of a smoke nuisance, which did away with the necessity for long expensive actions, would have been appropriate. Under Section 106 of the Act that procedure could not be taken in respect of the emission of smoke from premises occupied for the public service of the Crown, but it was the duty of the local authority to report the matter to the Minister to whom it was left to take such steps as might be necessary to abate it. It did seem, although it was not necessary to decide the point, that that section applied only to prevent summary proceedings under the Act and not so as to prevent a local authority bringing an action for an injunction. Once a hospital had vested in the Minister under the National Health Service Act, 1946, the Minister held it in trust for the Crown, and the regional board and hospital management committee carried out the administration of the hospital subject to the control and on behalf of the Minister. Section 106 of the Public Health Act, 1936, applied to premises occupied for the public service of the Crown and not to the occupiers. There was no doubt that the appellant committee were the occupiers of the hospital, but as the hospital management committee they were carrying out the duties imposed on the Minister by Act of Parliament, and it was impossible to say that the provision of hospitals for the purposes of the National Health Service Act, 1946, and the carrying on of a hospital were not for the public service of the Crown. His Lordship therefore thought that the hospital premises were occupied for the public service of the Crown and it followed that the committee were not amenable to the jurisdiction of the justices.

Mr. JUSTICE DONOVAN and Mr. JUSTICE HAVERS agreed.

Nottingham no. 1 Area Hospital Management Committee *v.* Owen —*Queen's Bench Division* (*Divisional Court*) Lord Goddard, *C.J.*, Donovan and Havers, *J.J.*, Oct. 16, 1957. Rodger Winn (solicitor, Ministry of Health): J. Elson Rees (Sharpe, Pritchard & Co., for Town Clerk, Nottingham).

J. F. LAMB
Barrister-at-law.

Sexual Offences

IN 1950 the department of Criminal Science of Cambridge University began an inquiry aimed at throwing light "on the many facets of sexual misconduct which seem to have escaped notice or could not be fully appreciated through lack of adequate data."

The resulting report deals with the cases of 2178 offenders involved or alleged to have been involved in indictable sexual offences. It also examines the records of 914 offenders against whom proceedings were brought for non-indictable sexual offences. The number of convicted offenders was 1985, of whom almost half (986) were found guilty of indictable or non-indictable homosexual offences. Heterosexual indictable offences, excluding bigamy, procuration, and abduction, accounted for 509 convictions, and indecent exposure (non-indictable) for 490 convictions.

Of the convicted offenders 69% were adults aged 21–50. 61% of all convicted offenders were unmarried; in the homosexual class the majority of the adult offenders were single. In more than half the families of married offenders there was no child or only one child.

The overwhelming majority of offenders had left school at 14, and only 18 of the total of 1985 had received university education. Quite a large number of sexual offenders were mentally dull. The facts suggest that sufficient consideration was not always given to the possibility of an offender being mentally defective.

83% of the convicted offenders had no previous convictions for sexual offences, and 81% of these had no previous convictions of any sort.

25% of all offenders brought to court were sent to prison, but as many as 2 in 3 of those sentenced to imprisonment were detained for short periods not exceeding six months. Only 1 in 10 was given the maximum sentence or an aggregate sentence exceeding two years, although for five of the offences imprisonment for life can be imposed, for three the maximum is ten years, and for two it is seven years. More than half of those who had committed sexual offences against children, and more than two-thirds of those convicted of offences against females aged 16 and over, were sentenced to imprisonment. More than half of those sentenced to imprisonment had previous convictions of some sort.

43% of all sexual offenders brought to justice were fined. For probation and discharge the proportions were 16% and 12% respectively. Probation was used much less frequently in the cases of those who had offended against males than against females—9% compared with 23%. Medical and psychiatric reports were requested for 4 in 10 of the offenders put on probation.

The proportion placed on probation who were not reconvicted of any sort of offence during the follow-up period of four years from the making of the orders was as high as 70%. The rate of success was higher for offences against females than against males. The results of medical treatment in conjunction with probation for homosexual offenders were "extremely disappointing" and for indecent exposure "hardly satisfactory."

85% of the 1985 offenders dealt with in the survey had no subsequent convictions for sexual offences in the four years after the date of conviction.

Of treatment the report says: "It must be stated at once that after investigating more than 3000 cases the Department is no nearer to a constructive recommendation for the general treatment of sexual offenders than it was when it began its enquiries. The most it can do is to refer to some of the findings of fact which emerged and suggest that the problem of treatment of the so-called sexual offender by the courts cannot be easily separated from the vast problem of treatment of offenders generally."

1. Sexual Offences: A Report of the Cambridge Department of Criminal Science. Edited by L. RADZINOWICZ, LL.D. London: Macmillan. 1957. Pp. 553. 63s.

In England Now

A Running Commentary by Peripatetic Correspondents

Them Atom Chaps must think we're a reet lot of daft bees up here in Cumberland. One year they tells us there'll never be no accident at these here atom factories; then next year they says, well, happen owt goes wrong them filters on girt chimneys will stop all them little atoms. Old Ma Ugglethorpe shook her grizzled head. We've had all kinds of accidents before in our village. Think of her Mabel's eldest. There's often a damn sight more comes out than what goes in, however careful you are.

Anyway, accidents is accidents, as Mabel says, but they has to be faced up to. When fun and games happened at Plutonium Works, them Atom Chaps, a bit outfaced, took a tidy time holding their breath, and then they says, aye, maybe some of them atoms has shot up through filters, but north-east wind blew muck out over sea. That shook us proper. We may look daft, but we know which way wind blows. We have a look at cow's tail. It took them chaps a couple of days to admit they was 90° off course. Fun started after that. First they says there was no risks, then there was risks. We was proper flummoxed. Then they goes to have a look at cow's tail, and get deafened by clicks from Geiger gadget. Up comes village bobby in middle of night to stop milk round our district. Me brother's farm went on sending milk to depot for another couple of days ere he was stopped. He can't understand why it was safe to dilute it with bulk supplies one day and not the next, but, as Mrs. Ugglethorpe says, you can't expect to go on shoving hot iodine into kids' gizzards and keep their collars looking tidy, let alone mucking up the little perishers' marrow with that there Strontium-90. And after what her sister went through with her fifth, she'll have none of this Cæsarian-137 they talk about.

But it's a fat lot of good crying over milk spilt down drains. Our village may be bottom in eleven-plus exams, but Top People seem to have rumbled muddle, too. Me six-pennorth of chips was wrapped in their newspaper at dinner time on October 10th, and *Times* leader chap says only frankness can reassure. Maybe that'll show which way wind's blowing. I can feel it in me bones.

* * *

I was telling Ananias the other day about one of our patients who wore his truss outside his trousers and hooked his umbrella on to it, and how one evening it became trapped in a tip-up seat at the theatre and he had to be hack-sawed free between acts II and III of *Le Lac des Cygnes*. Ananias said that his Uncle Fred had been having trouble too. His truss was a waterproof celluloid contraption which he could wear when swimming, and he was towelling himself in his Mediterranean beach-hut when he backed against a lighted cigarette which he had carefully laid on the edge of the table. The celluloid caught fire and Uncle Fred rocketed out of his hut and across the crowded plage into the sea in a cloud of smoke and steam. This performance evoked much Gallic enthusiasm, the only dissenters being two gendarmes who commanded Uncle Fred immediately to present himself so that the infernal machine he harboured could be examined. Uncle Fred, somewhat flambé and having lost his dentures as well as his truss, stubbornly remained waist-deep in the sea, thus soothing his blisters and preserving the decencies. Ananias thinks that his attempts at explanation may well cause all future phrase-books to include the sentence, "See! The truss of my Uncle is on fire!"

* * *

I think I can solve my fellow peripatetic's bed problem. A few years ago, we went through the whole process following a thorough reconditioning of our interior-sprung mattress. It ended up with a lively correspondence between a titled member of the bedmaking fraternity and myself.

The answer is to get a cheap flock mattress and put it on top of the interior-sprung one. They will try to sell you a hair mattress, but this is quite unnecessary. The result is dramatic and highly satisfying. The springs give support without trauma to the pressure-point.

* * *

I have spent a large part of my life evading simple truths.

"Darling, you're working too much!"

"No, I'm not."

And I work even harder just to show her my reserves. After 20 visits, 2 surgeries and 1 skin clinic I come home and mow the lawn and then, with maniacal energy scythe the orchard: after that I de-slug, de-fly, weed, and water the green-house. As darkness descends, I trudge into the house exhausted. My wife lies on the sofa relaxed as a cat, reading *Vogue*.

"Really, Darling, you do too much."

"No, I don't. Anyway, it's got to be done. Have you seen *The Lancet*?"

"Ease up! Why don't you read something readable?"

And so it has gone on for many years. And for many years I have had a cruel attack of winter bronchitis or 'flu or both and never once have I gone to bed.

On Monday afternoon I was excising a piece of skin for biopsy, having listed 23 possibilities in the differential diagnosis, when I was attacked by the virus. I began an immediate and fearful trembling, to my own discomfort and the patient's profound disedification. My Code forbade me to explain its cause. I went home feeling ill. As I locked the garage I began to adjust my moral armour, the sword of the spirit, to resist my wife who would certainly press me to go to bed.

I refused my supper, stoked the fire, and then sat over it coughing and sneezing. Beaded sweat ran silently over my brow like water over marble. My wife lay on the sofa with her shoes off, relaxed, cool, elegant, unmoved.

I was furious.

I tottered to my feet. "I'm ill and I'm going to bed, and you can telephone whoever you like and tell them to cope."

From then on life became not only bearable but delicious. The bathroom was heated and the water run in over a fine scattering of lilac salts. Two hot-water bottles (the first in my life) were put between soft flannelette sheets. A dish of hot seasoned chicken broth followed and a couple of codeines sent me off into a warm, dreamless sleep. Like a bun in the oven I cooked quietly overnight in circumambient heat. And in the morning, since my wife did not inquire, I told her I was only a little better and intended to stay in bed. She sat me in a chair with a warm dressing-gown around me, made my bed, brought fresh bottles and the morning papers. Later came a bumper breakfast with pork sausages, tomatoes, smoked bacon, toast with rhubarb and ginger jam, and black coffee. It is in the aroma of this coffee that I write hot-press to Peripaticians everywhere and give them my advice. Do as she tells you. Ease up. GO TO BED.

* * *

She was a charming, frank 8-year-old admitted with a short history of vague abdominal pain. After the usual introductions I asked her what this pain was like. She was obviously a little puzzled at first, but then said very earnestly: "Well, it's just like the Russian satellite going round and round inside my tummy and going bleep . . . bleep . . . bleep." I might add that no abnormality was found on physical examination, and her stay in hospital has not been ill-starred.

* * *

When the patient from Central Africa generously presented me with a fine ivory walking-stick, his classical education may or may not have been extensive enough to understand my muttering reception "*Absit omen!*" But in any case he could not have known that I had a few hours previously consulted my ophthalmologist colleague who had taken a rather gloomy view of my progressing senescent amblyopia.

* * *

Overheard in the laboratory: "Can I have a bottle for electric lights, please?" Sodium ones presumably.

Letters to the Editor

INFLUENZAL PNEUMONIA TREATED WITH CORTISONE AND ANTIBIOTICS

SIR,—This hospital has 1131 beds, with 362 in the department of medicine. We received in July and August of this year 365 cases of postinfluenzal pneumonia. These patients were treated with a combination of penicillin, streptomycin, and tetracycline in high doses, with analeptics, oxygen, and cardiac stimulants in the most severe cases. But the mortality in this series was 22%. In each case the cause was confirmed by necropsy.

In view of this very high mortality, we began treatment with cortisone, together with antibiotics, in the worst cases. 100 mg. of cortisone was given daily for five to ten days. The 7 cases so treated had bilateral post-influenzal pneumonia, confirmed by radiographic examination.

All the patients were very ill; some had underlying chronic disease (coronary-artery sclerosis with cardiac failure in 2, bilateral pulmonary tuberculosis in 1, cirrhosis of the liver in 1, and diabetes in 1). Treatment for three to five days without cortisone had been unsatisfactory, and the patients were in a very poor condition. With cortisone the course of the acute disease changed dramatically in twenty-four hours: temperature, pulse-rate, and respiration-rate returned to normal, and severe hypotension was terminated. In the next seventy-two hours the acute bilateral infection subsided, and the underlying chronic disease was restored to its pre-influenzal state. In this section of the hospital there were no further deaths.

The most dramatic case was that of a 22-year-old man with bilateral pulmonary tuberculosis. He came into hospital with bilateral pneumonia. Temperature 104°F, respiration-rate 64 per min., pulse-rate 188 per min., and blood-pressure 90/50 mm Hg. He was treated with bed rest, streptomycin, isoniazid, penicillin, tetracycline, leptazol, lanatoside C ('Cedilanid'), and oxygen. On the fourth day of treatment he had a haemoptysis of 250 ml. and appeared to be dying. 100 mg. of cortisone daily apparently saved his life in twenty-four hours: within seventy-two hours he was completely recovered from the acute disease.

We think that the good results with cortisone were due to correction of an acute adrenal insufficiency, which may have been the underlying cause of the high mortality.

M. PLAZA DE LOS REYES
R. CRUZ-COKE
R. OROZCO
I. MATUS
A. CRISTOFAFNINI.
Department of Medicine, Aguirre Hospital, University of Chile, Santiago.

INFLUENZA IN SINGAPORE AND BRITAIN

SIR,—The account by Dr. Lim and his colleagues last week of the influenza outbreak in Singapore draws attention to the presence of serological inhibitors to several other strains of influenza in the Asiatic population, although epidemics due to these strains had not occurred during the past twelve years.

A feature of the present epidemic in Britain is that a number of cases exhibit gastrointestinal symptoms, usually in the early invasive stage of the infection. Similar gastrointestinal symptoms are occurring in some contacts of clinical cases, a number of whom develop what seem to be abortive attacks of influenza, with transient symptoms such as headache and malaise lasting only a matter of a day or so, and followed by a slight tracheal cough.

The significance of this is that, in the invasive stage of influenza, the virus appears to simulate the polio virus, in that there is early infection of the gastrointestinal tract. If this is so, it is possible that the gut may remain infected with the influenza virus, as it does with polio virus. We know that serological inhibitors to polio virus appear at a very early age in populations where strict personal hygiene is difficult to achieve. I suspect that either "silent" or subclinical infections with the various strains of influenza may be far more common in tropical countries than we had supposed. This may partly explain the disparities between the Europeans and the Asiatics in the attack-rates and in the presence of multiple inhibitors.

D. WARREN BROWNE
Medical officer of health.
Chichester, Sussex.

"PNEUMOCONIOTIC NEUROSIS"

SIR,—In defending the present system of assessing pneumoconiosis, Dr. Holt (Oct. 12) makes statements not borne out by facts. It is not correct that all insured persons claiming industrial-disease benefits for pneumoconiosis are examined by a member of a pneumoconiosis panel. The fact is that, in Dr. Holt's area alone, for example, in 1956 nearly 20% of applicants were *turned down on the basis of the preliminary radiograph only*. Nationally, the relevant figure reaches nearly 50%. The Ministry of Pensions and National Insurance gives the following figures for 1956:

Sheffield.—Preliminary radiograph, 1929; 1st examination, 1555.

All panels.—Preliminary radiograph, 14,112; 1st examination, 7274.

It is correct that miners found to have pneumoconiosis continue to work in the pit; but it is only fair to say that the main reason for their doing so is often lack of alternative and suitable employment. Any attempt to assess the soundness of the present system of diagnosing pneumoconiosis for the purpose of the Industrial Injuries Act must start with critical examination of the definition of the disease as given in the Act. The amazing fact is that the Act bases the diagnosis of pneumoconiosis entirely on radiological appearance. It completely omits to mention state of lung function. It is hardly surprising, therefore, that many miners develop "neurosis" once they find that their just claim for benefits they should be entitled to by having paid their weekly contributions has been disallowed; yet they find themselves unable to carry on their occupation because of breathlessness. Their "neurosis" is only aggravated by reports such as that printed recently in a Sheffield newspaper. The inquest on four miners resulted in a verdict of "death due to pneumoconiosis" of two miners, though the claim of the miners had been disallowed a few years earlier, during their lifetime.

I submit, sir, that the present basis of diagnosing pneumoconiosis for the purpose of the Act is entirely out of keeping with facts ascertained and published.[1]

As long as only radiological appearance forms the basis for diagnosing pneumoconiosis—i.e., lung damage caused by dust—we shall be given the following distortion of facts contained in the Quinquennial Supplement of the Registrar General:

Cause of death (hewers and getters of coal)	*Standard mortality ratio*
Bronchitis	180
Pneumonia	162
Myocardial degeneration	186

One can only wonder, on the basis of these figures, to what extent the lifelong exposure to dust in the pits has been considered as a contributory factor to the cause of death.

I agree with Dr. Holt that the appointment of yet another commission of investigation is unlikely to solve the difficult problem. What is needed is an amendment of the Industrial Injuries Act (1946), based on the suggestion contained in the M.R.C. report[1] (p. 149):

The only practical assumption to make is that the degree of breathlessness is a measure of the extent of the pulmonary damage done by pneumoconiosis, and to measure the degree by an objective test as a basis for assessment. But some

1. *Spec. Rep. Ser. med. Res. Coun. Lond.* 1955, no. 290.

allowance should be made for the X-ray stage, since the more advanced this is, the more likely is the breathlessness to be due to pneumoconiosis.

Batley, Yorkshire. H. GRUNWALD.

MEGALOBLASTIC ANÆMIA DURING ANTI-CONVULSANT THERAPY

SIR,—We are interested that Dr. Barker (Oct. 12) has often noticed macrocytosis in routine blood-counts in epileptic patients, since this was found in 36% of 159 epileptics whom we examined in an epileptic colony.[1] We have also noted it in 6 out of 30 epileptics attending as outpatients at a general hospital.

There is no conclusive evidence that this macrocytosis is due to the epilepsy or to the anticonvulsant drugs, since it is so difficult to find any group of epileptics not receiving some form of drug therapy. We have inferred that it is a side-effect of drug treatment for the following reasons: the incidence of macrocytosis can be correlated with the drug dosage, and in two of our cases where it has been possible to discontinue treatment the macrocytosis has disappeared; furthermore, it is now generally accepted that the megaloblastic anæmia is due to the drugs, and in some of our series of eight patients with macrocytic anaemia (five megaloblastic), a macrocytosis has persisted unless folic acid was given concurrently with the anticonvulsant drugs.[2] Macrocytosis, unassociated with any anæmia, has been eliminated in almost every instance by folic acid, but, given over a period of 6 months, it has not altered the frequency of fits. We carried out this trial because there had been a striking reduction in the fits in several of our patients with megaloblastic anæmia when the anæmia was cured.

We are sure that Dr. Barker is correct in suggesting that megaloblastic anæmia in epileptics on anticonvulsant drugs is more common than generally realised. Many cases must have been missed and labelled pernicious anæmia. We do not entirely agree with his suggestion that study of these patients should be confined to those having a megaloblastic bone-marrow; for this would exclude many interesting examples of macrocytic anæmia where B_{12} or folic-acid deficiency could be proved by appropriate tests or the response to treatment. The appearance of megaloblasts in the bone-marrow may, as in idiopathic steatorrhœa, occur only when the red cells are depressed below a certain level, and so represents only one phase of the anæmia.

Megaloblastic anæmia has been recorded in epileptics receiving either phenytoin sodium [3] or primidone alone,[4] and in a patient taking large amounts of barbiturate, 'Tuinal', containing amylobarbitone sodium and quinalbarbitone sodium.[5] Girdwood and Lenman [6] have emphasised the structural similarity between phenytoin, primidone, and phenobarbitone and we believe that phenobarbitone also may cause megaloblastic anæmia in epileptics. We are at present studying a female epileptic of 43 years who presented with a megaloblastic anæmia—red cells 1·9 million per c.mm., and hæmoglobin 43% (6·2 per 100 m.). She has free hydrochloric acid in the stomach, no evidence of steatorrhœa, and has responded to B_{12}. Unfortunately, she illustrates the two features that make study of these patients so difficult. She is an imbecile who almost requires an anæsthetic for the simplest investigation, and has, from time to time, been given other drugs—chlorpromazine and paraldehyde—apart from the phenobarbitone (gr. 2 daily) that had been the basic drug for several years.

The General Hospital, Birmingham. C. F. HAWKINS
M. J. MEYNELL.

1. Hawkins, C. F., Meynell, M. J. *Quart. J. Med.* 1956, **25**, 567.
2. Hawkins, C. F., Meynell, M. J. *Ibid* (in the Press).
3. Hawkins, C. F., Meynell, M. J. *Lancet*, 1954, ii, 737.
4. Fuld, H., Moorhouse, E. H. *Brit. med. J.* 1956, i, 1021.
5. Hobson, Q. J. G., Selwyn, J. G., Mollin, D. L. *Lancet*, 1956, ii, 1079.
6. Girdwood, R. H., Lenman, J. A. R. *Ibid*, i, 146.

SIR,—Dr. Barker's timely letter prompts me to add some of my own observations. Since the first case diagnosed in my department [1] I have had the opportunity to see four further patients, all of whom had received both phenytoin sodium and phenobarbitone for varying periods. One of them, with a moderate megaloblastic change and marked white-cell changes of the type seen in B_{12}-deficiency or folic-acid deprivation, later had a severe megaloblastic relapse after folic-acid therapy was stopped. Another, a 30-year-old primipara who had a well-balanced diet throughout pregnancy, had advanced megaloblastic change at term; such a change had been suspected elsewhere a year previously as the result of certain peripheral findings, but this was not confirmed by the bone-marrow appearances at that time. Two further examples were seen in mental patients, one with very slight and the other with moderate marrow changes.

The megaloblastic change after anticonvulsants is somewhat peculiar. The youngest cells have an extremely fine chromatin pattern of the nucleus and deep basophilia of the cytoplasm. The number of nucleoli varies; they are often indistinct or may be invisible. Beyond the early basophilic megaloblast stage, the nucleus becomes much coarser than in pernicious anæmia and there are much fewer cells which can be identified as megaloblasts by their nuclear pattern. Megaloblasts with advanced hæmoglobinisation of the cytoplasm are relatively rare. These appearances suggested to us the ætiology in our last two cases.

The good result of oral folic-acid therapy does not favour the theory of inhibition of the intestinal absorption of the drug. It would appear that in certain individuals the presence of more than the usual amount of folic acid is required to counteract the action of the anticonvulsant drugs on certain enzyme systems involved in nucleic-acid metabolism. It is very likely that minor disturbances of this metabolism are more frequent than is generally thought and could be brought to evidence by careful hæmatological studies.

The question of megaloblastic anæmias due to anticonvulsants has been well reviewed recently by Gydell,[2] who also added three cases of his own—the first cases published in the Continental literature.

City General Hospital, Sheffield. S. VARADI.

THE WOLFENDEN REPORT

SIR,—May I assure Dr. Coates (Oct. 5) that in writing my letter of Sept. 28 I had in mind the pitfalls of argument by analogy, but used that method for brevity and emphasis.

Dr. Noble's points (Oct. 12) are of more weight; he says it appears from the Kinsey report that 50% of the population of the United States are at some time and in some degree homosexual. The validity of Kinsey's figures may in themselves be doubtful, but also the application of American statistics to this country is certainly unsafe. Statistics as to homicide in Chicago would also be an unsafe basis for discussion of conditions in Britain.

During some years as a venereologist I had opportunities to consider sexual activities in civilian and Service life, in most European and some non-European races. My observations suggest that actual homosexuality is uncommon. It is no doubt true that ambivalent sex tendencies may be present at some time in many or all men; as to that the Freudian and the orthodox believer in Original Sin would broadly agree. They would also agree that aggressive tendencies are widespread, although actual homicide is unusual.

My thesis is that any organised body, individual or collective, must, as a condition of its survival, protect itself against those things that are inimical to it, that homicide and overt homosexuality are examples of such things, and that organised society rightly, therefore,

1. Rhind, E. G., Varadi, S. *Lancet*, 1954, ii, 921.
2. Gydell, K. *Acta haemat.* 1957, **17**, 1.

forcibly represses them. These are condensed propositions, which can, I submit, be defended in detail.

Accrington. R. C. WEBSTER.

RECURRENT ABNORMALITIES OF THE THIRD STAGE OF LABOUR

SIR,—An excellent analysis of the causes of recurrent postpartum hæmorrhage was given by Mr. Dewhurst and Mr. Dutton last week. It was surprising, however, that they made no mention of the possible emotional factors involved.

It is well known that the action of the uterus in all stages of labour may be affected by nervous imbalance arising from emotional causes, and any patient who has previously suffered a serious complication in the third stage of labour must look forward with considerable trepidation to a possible recurrence. It seems not improbable that this alarm reaction might be sufficient to produce inhibition of normal uterine action in the third stage of any subsequent labour.

Birmingham. WILFRID MILLS.

EFFECT OF *d*-TUBOCURARINE CHLORIDE ON BLOOD-PRESSURE OF ANÆSTHETISED PATIENTS

SIR,—In Dr. Thomas's interesting article of Oct. 19 I see that while the majority of his patients showed a fall in blood-pressure following the injection of curare, about 12% showed a rise. The fall can readily be explained by histamine release, autonomic ganglion blocking, or both, but I have never seen any credible explanation of the rise. It was originally supposed that it was due to an increase in carbon-dioxide tension from depressed respiration, but I have many times shown this to be false since marked hyperventilation with a CO_2 absorber has no effect. It would be interesting to learn if any of your readers can suggest the reason for this not infrequent effect.

London, N.6. C. LANGTON HEWER.

SECOND THOUGHTS ON ANTICOAGULANT TREATMENT FOR MYOCARDIAL INFARCTION

SIR,—Domiciliary treatment of conditions for which patients are usually removed to hospital not only is proving a valuable way of saving hospital money and beds but enables general practitioner and hospital specialist to cooperate in treating a case under conditions in which, as well shown in cardiac infarction, the patient may do even better than in hospital. Dr. Irving S. Wright (Oct. 5) is quite correct when he says that "thousands of patients are constantly receiving this therapy under the care of conscientious physicians and good laboratory services." My own view is that such care produces results which justify the regular use of anticoagulant therapy without attempting to separate cases into poor-risk and good-risk groups. If the general practitioner is to look after such cases he must have specialist assistance in assessing the need for a variety of therapeutic measures and in fixing a regime, and must have bedside control of the anticoagulant carried out by medical men with wide experience and prepared to consider and consult on each case.

If the clinical pathologist is to do this he must do his prothrombin test at the bedside and fix the dosage there and then. To do so he may have to sacrifice a meticulous accuracy in favour of clinical insight. So long as he knows his margin of error and treats each case individually he will be of service to both the general practitioner and the patient. He may prefer a prothrombin-time longer than 12 seconds so as to reduce the potential mathematical error, and for the same reason records the time rather than any mathematical ratio. This brings me to your editorial in the same issue. A simple method measuring all the factors influenced by modern anticoagulants would be a wonderful help. In its absence can you really justify your condemnation of those who use Russell's viper venom? Whom does it mislead and what are the "dangerously wrong results" it gives? All prothrombin-times in my department are done on capillary blood as a bedside test. The dosage of anticoagulant and the frequency of the tests are decided by the laboratory consultant staff. We have published no results because we have done no control series; but our own view, and that of the general practitioners of the area, is that anticoagulant therapy is well worth while.

But we have experimented with thrombóplastin. I believe viper venom to be an excellent source for our purposes, but other members of the staff have in turn used commercial and laboratory-prepared thromboplastic material. The only troubles we have had have been with commercial brain preparations. In my own hands, Russell's viper venom (Burroughs Wellcome) has proved stable and constant. Perhaps if I had aimed at a ratio of 3 times normal I should have had "dangerously wrong" results; but aiming at not more than 2·5 times and always erring a few seconds below rather than above that figure, control has been easy and the service praised by all who use it. My staff work to the same limit, and while we have had a few cases sensitive to very small increases in phenindione, which we usually advise, all have been susceptible to control when carefully watched. It is less dangerous for a clinically trained medical man to use his judgment as to the method he will use than to attempt, as you imply some do, to leave anticoagulant therapy in the hands of a non-medical technician, using a bench method which may be accurate in seconds but very remote from the patient.

Pathological Laboratory,
Kingston Hospital,
Kingston-upon-Thames,
Surrey. D. STARK MURRAY.

MENTALLY HANDICAPPED CHILDREN

SIR,—May I comment on two of the suggestions made by the Royal Commission on Mental Health?[1]

Writing about diagnostic centres (para. 687) and case conferences for Mental defectives (para. 688) they mention "psychiatrists, psychologists, and mental health workers"; and again "an administrative medical officer, a doctor from the psychiatric hospital, representatives from the education or welfare departments, and if possible also the patient's general practitioner." No-one will quarrel with these two admirable suggestions, but is it not surprising that a pædiatrician is not included? Surely a mentally handicapped child is first of all a *child*—liable to all the troubles which beset normal childhood? Without a general children's physician in the team there is even a danger of important physical disease being incorrectly appreciated or treated. We should remember, too, that very often it will be the pædiatricians who first suspect the mental defect, so that their continuing education in the difficult art of diagnosis is of the greatest importance. Excluding them will deprive them of this.

The omission of the general children's doctor is all the more surprising in view of the Royal Commission's declared intention of breaking down the barriers which now isolate mental defectives, and so restoring them to the community of children in general. For example, they believe that severely handicapped children may at times be nursed in general children's hospitals (para. 592). Perhaps this omission may be connected with the absence of a pædiatrician from the distinguished men and women who form the Royal Commission.

The second point I disagree with is their suggestion that occupation centres should be the concern of health, rather than education, authorities (paras. 637–8–9). Plainly, the Royal Commission had differing evidence given to them, and it seems to me that the reasons they give in their report do not justify their conclusions. The suggestion conflicts with the important principle mentioned above: it again erects an artificial, and unnecessary, barrier between handicapped and normal children. Surely it would be much more satisfying

1. Report of Royal Commission on the Law Relating to Mental Illness and Mental Deficiency. H.M. Stationery Office. Cmd. 169.

for the parents of a handicapped child to feel he were trained (why not "taught"?) by the education committee rather than treated by the health committee. The former system would have the added advantage that the services of the school-attendance officer would be available.

These small disagreements in no way detract from my great appreciation of the warm-hearted sympathy which inspires the Royal Commission's report, and of its excellent recommendations.

Whipps Cross Hospital,
London, E.11. E. HINDEN.

SPINAL DEFECTS IN HIGH- AND LOW-FLUORIDE AREAS

SIR,—I have read with interest the article by Dr. Eley and his colleagues in your issue of Oct. 12. I note that the investigation was sponsored by the Ministry of Health and took place in 1954. At that time radiologists were not as conscious of the genetic hazards of radiation as they are now. Today it would seem unjustifiable to submit a fairly large number of normal male children at about puberty to irradiation of their gonads, which would have been inevitable in this investigation. It would seem that this investigation could well have been carried out by studying films taken at hospitals in the area for the investigation of possible spinal injuries to casualties.

I hope that the Ministry of Health will not sponsor a similar investigation again. In the light of the recent work on the genetic hazards and danger of radiation to the fœtus, I have abandoned the work I was doing on hiatus hernia in pregnancy.

Harrogate. M. W. P. WARD.

ACCURATE DISPENSING OF OCULENTA AND EYE-DROPS

SIR,—The instillation of oculenta into the conjunctival sac is a rather haphazard procedure, for the amount of ointment instilled varies considerably, even between different instillations by the same person. Often as much or more of the ointment is smeared on to the lids as is introduced into the conjunctival sac, especially in home use when it is applied by those without experience. Likewise the amount instilled into the conjunctival sac from a pipette delivering one or two drops into the sac varies considerably, since drops are hardly definite quantities.

In an observation in which three experienced people were asked to instil 1% atropine ointment into the conjunctival sacs of children, it was found that the quantity instilled varied from 30 to 80 mg. Similarly, with drops of 1% atropine sulphate solution instilled into the conjunctival sac by experts using different pipettes available at the hospital the amount varied by as much as 60%. With a drug like atropine, where the toxicity is relatively low, such variations in dosage probably do not matter much, but this is hardly so with more toxic drugs such as hyoscine and eserine, and more accurate use seems advisable.

With this object in view we have had made for us gelatin capsules containing a fixed amount of ointment (see figure). At present these capsules are available only with 100 mg. of 0·5% atropine sulphate ointment (+10% overage), so when the whole of one capsule is delivered into each conjunctival sac a total dose of 1·0 mg. of atropine is instilled in the two eyes—the maximum pharmacopœial dose for adults. Used at the frequency atropine ointment is generally employed at refraction, these applications give adequate mydriasis and cycloplegia and have two distinct advantages. In the first place, a known quantity of atropine is instilled, and secondly, the atropine is delivered in sterile form, for each capsule is sealed until the end is cut off before instillation.

A measured amount of alkaloid, or other highly toxic agent, can be readily delivered in the form of drops if a pipette is used of standardised bore and marked to show 0·1 ml. This is a definite quantity, instead of a vague 1 or 2 drops. If 1% solutions are used, 0·1 ml. contains 1 mg. of the agent, so a known quantity is administered.

Atropine eye ointment dispensed in gelatin capsules for refraction purposes would, according to a common routine, involve issuing to the patient 16 capsules, 1 being used in each eye twice a day for four days. Dispensing in capsules is likely to be slightly more costly than dispensing in small sterilised collapsible tubes, as recommended by the pharmacopœia, but that may be balanced by a saving from a reduction in the amount of ointment dispensed. Glass pipettes, with a standard bore marked at the level of 0·1 ml., cost no more than the pipettes generally available. They may lead to some saving in the quantities dispensed, for with the delivery of 1 or 2 drops from the pipettes commonly used there are probably five or more drops left in the pipette and wasted.

We are indebted to Messrs. R. P. Scherer, of Slough, for making a generous supply of the gelatin capsules containing atropine. The graduated pipettes are manufactured by The Anchor Glass Company Limited, London, N.W.2.

Royal Eye Hospital,
London, S.E.1. ARNOLD SORSBY
L. J. YARRELL.

RENAL FAILURE FOLLOWING AORTOGRAPHY

SIR,—Dr. Samuel and Dr. Denny say in their letter (Sept. 21) that aberrant (accessory) renal vessels are not demonstrated by selective renal angiography. This is not strictly correct, for they are in fact demonstrated indirectly in the nephrogram by the presence of a zone of non-opacification, usually polar in distribution, and selective catheterisation of the accessory vessel may then be undertaken; it is only if this vessel is hypoplastic that catheterisation may be difficult and a renal aortogram is then necessary.[1]

For the investigation of the renal aspects of hypertension, particularly hypertension due to occlusive renal arterial disease, it is obviously necessary to have bilateral assessment of renal arterial architecture, especially the proximal parts of the renal arteries; therefore renal aortography is essential.[2] But it is also necessary to have clear, detailed and unobscured sight of the smaller intrarenal arterial branches,[3] which is not always achieved by retrograde renal aortography owing to masking by the overlying cœliac axis and mesenteric branches.[1] This will almost certainly happen if the catheter-tip is sited above renal-artery levels. We have seldom failed to get retrograde filling of the renal arteries by placing the catheter tip 1–2 in. below the hila of the kidneys, whether we have used mechanical or manual injection speeds and pressures. This observation is based on experience of the retrograde method of aortography over the past three years. I am sure Dr. Samuel and Dr. Denny concede that the demand for renal aortography for the investigation of hypertension is not as great as it is for the elucidation of other renal lesions in which selective renal arteriography is undoubtedly the method of choice, but we have not suggested that the selective method is the only practical method of all forms of renal angiography.[1]

When the reduction of chemotoxic effect by selective renal arteriography is considered, it is not only the known small volume (about 4–6 ml.) of contrast medium which is important but also the low concentration (30%). We also believe that medium and blood mix freely, as is sometimes shown by "streamlining" appearances in the renal artery, before dissemination in the renal parenchyma; but an unstable catheter tip in retrograde renal aortography may result in a large and unknown volume

1. Gregg, D. McC., Allcock, J. M., Berridge, F. R. *Brit. J. Radiol.* 1957, **30**, 423.
2. Poutasse, E. F., Humphries, A. W., McCormack, L. J., Corcoran, A. C. *J. Amer. med. Ass.* 1956, **161**, 149.
3. Hodson, C. J. *Proc. R. Soc. Med.* 1957, **50**, 539.

of high-concentration contrast-medium being inadvertently injected directly into a kidney. The dictates of Alwall et al. [4] and of Idbohrn [5] should not be dismissed too lightly.

Addenbrooke's Hospital,
Cambridge. DUNCAN GREGG.

ESTIMATION OF PLASMA-PROTHROMBIN

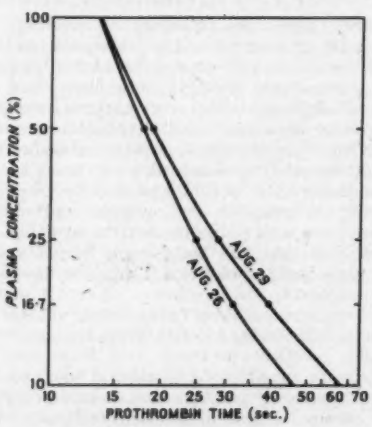
SIR,—In your leading article (Oct. 5) you say that a disadvantage of the dilution-curve method of estimating plasma-prothrombin is that "the shape of the curve means that reduction in prothrombin activity has relatively little effect on the clotting-time until the level falls below about 30%; but after this point a second or so difference in the clotting-time corresponds to a large reduction of prothrombin activity, and the method of observing the end-point hardly allows accuracy of this degree."

The first half of this statement, which is correct, means that at *high* prothrombin-activity levels (or by methods resulting in short clotting-times) a second or so difference in the clotting-time corresponds to a large reduction of prothrombin activity. The second half of the statement then becomes wrong and, in fact, at low prothrombin-activity levels relatively large differences in the clotting-time result from slight changes only in prothrombin activity. By using the dilution-curve method, therefore, inaccuracies in technique, when the patient's prothrombin activity is near danger levels, will not introduce gross, possibly dangerous, errors in the estimation.

The point is illustrated in the accompanying figure—two prothrombin curves in the same patient, prepared at an interval of three days during which a coronary thrombosis developed. From the Aug. 29 curve the following results are obtained:

Plasma-prothrombin time (sec.)	*Prothrombin activity (%)*
14	94
15	79
18	55
55	11·3
56	11·1
59	10·5

The curves illustrate a further important feature. The onset of cardiac infarction is followed shortly by a reduction in prothrombin activity. This is reflected in the well-known lower dosage of coumarin anticoagulants required in coronary thrombosis than in, for example, femoral thrombosis. The "shift to the right" in the curve is helpful in assessing initial dosage of this series of drugs and, as is seen, is entirely missed if neat plasma alone is used.



Prothrombin curves before and after coronary thrombosis

LOUIS STEINGOLD
D. W. G. SMITH
St. Andrew's Hospital, A. A. ROBERTS.
London, E.3.

SIR,—Dr. Powell, in his letter of Oct. 19, commenting on my own letter, says I imply that acetone-dried brain extracts and saline extracts give similar results. This is not so: anyone familiar with the use of different thromboplastins is aware that not only do different methods of preparation of brain extracts yield different results, but even the same method of preparation may not give identical results. This, in my opinion, is particularly so with dried brain extracts as compared to saline extracts.

Owen,[1] in addition to confirming this view, states that saline extracts keep stable indefinitely when stored at —20°C, and I can amply confirm this from the use of many such extracts over several years.

New End Hospital,
London, N.W.3. M. TOOHEY.

HEALTH CENTRES: NEW PATTERNS

SIR,—In your annotation (Oct. 12) you say:

"as the London local medical committee has pointed out, the right time to build a health centre is when the first of the houses or flats are going up."

The London local medical committee, in its report on health centres, discussed at considerable length the question of providing them on new housing-estates, and came to the considered conclusion that new housing-estates were not suitable areas in which to build health centres.

You also say:

"With the one, unofficial, exception of Harlow New Town, health centres have always been added to areas of new housing development long after the housing has been completed, when the patients have already found their way to existing doctors' surgeries and established their pattern of behaviour."

The local medical committee's report gave much attention to the position at Clifton, Nottingham, where the health centre was opened when only about 10% of the houses had been completed.

Local Medical Committee for the County of London, F. GRAY,
Tavistock House South, Secretary.
London, W.C.1.

LIFE WITH A DUODENAL ULCER

SIR,—Looking back over the history of a duodenal ulcer, which I have had for 25 years and which I now keep "permanently" inactive by dieting, I should like to sum up its main features—as a rider to a paper you published in 1954.[2] My ulcer attacks are, I believe, entirely provoked by dietary indiscretions, and rigid adherence to a suitable diet entirely prevents recurrences.

Against the background of a rigid non-ulcer-provoking diet, it is possible to identify individual meals which have provoked an attack. There may be a latent interval of several (3–4) days between the offending meal and the onset of ulcer pain. This is the feature of the disease, which makes recognition of the offending food so difficult. Once an attack has started, it pursues (in the absence of bed rest) a course of about 3 weeks despite dieting. Failure to diet will prolong the attack. During the attack, foods quite compatible with recovery are followed by pain and come under suspicion. It will be seen that the taking of ulcer-provoking food may appear to be harmless on account of a latent interval before the onset of an attack and, on the other hand, that after the onset of an attack, harmless foods may be thought to be harmful.

My ulcer diet is a diet from which foods which have been subjected to any degree of heat damage or charring are excluded.

4. Alwall, N., Johnsson, S., Tornberg, A., Werkö, L. *Acta chir. scand.* 1955, **109**, 11.
5. Idbohrn, H. *Acta Radiol., Stockh.* 1956, **45**, 141.

1. Owren, R. A. *Scand. J. clin. Lab. Invest.* 1949, **1**, 81.
2. *Lancet*, 1954, i, 1074.

Meat may be taken as stewed minced beef or boiled silverside or as corned beef, and I have also found that grilling at a low heat, a long way from the grill is a satisfactory method of dealing with steaks. Fish may be boiled or steamed, or, in the case of herring or mackerel, slow grilling is again satisfactory, as the browned skin may be peeled off, leaving a fish which has effectively been steamed in its skin. Tinned foods are best avoided in the absence of knowledge of the effects of the dyes and flavours put in by the manufacturers. I have generally found that the tinned fruits (peaches, pears, pineapples, &c.) are satisfactory as also are unflavoured tinned foods such as tinned salmon. Soups usually contain extractives of roasted foods and are best avoided.

Eating out is hazardous. I imagine that the modern prevalence of duodenal ulcer is a reflection of a change in our habits of preparing food—*e.g.*, from slow low-temperature cooking (stews and boiled vegetables) on the kitchen grate, to high-temperature frying and grilling on electric cookers and gas-stoves.

M. B.

RADIATION AND BIOGENESIS

SIR,—In connection with Mr. N. W. Pirie's very interesting speculation,[1] may I suggest that the coincidence of the great epidemic of influenza in Asia with the rise in the level of man-made radiation (caused by the various nuclear tests in and outside Asia) might be due to unknown consequences of radiation, which are not only mutations. These evil consequences might include biogenesis—i.e., the origin of viruses directly from non-living substance under the influence of radiation.

Cosmic radiation is, we know, detrimental to all highly developed forms of living beings, from bacteria upwards. All these forms of life are protected against the action of this radiation by the atmosphere. On the other hand, cosmic radiations and like processes may be able to stimulate biogenesis. Indeed, life may have begun thus, if suitable conditions existed in the earliest period of development of the earth. If anywhere on the earth biogenesis takes place (i.e., if any ultra-primitive forms of life are now originating) it can be only in the highest strata of the atmosphere, in the ionosphere.

These strata, especially the ionosphere, show changes in the constitution of air, in the relation between oxygen and nitrogen, and in the presence of OH-anions. The origin of hydroxide ions can be a result of chemical action between atomic hydrogen and ozone:

$$O_3 + H = O_2 + OH$$

Or it may be an expression of biogenetic processes. Normally, in our time, these processes seem not to be of great intensity; but what may happen if the equilibrium of ions, atoms, and molecules in the stratosphere is disturbed by a rise of radiation of any kind, caused, for example, by the nuclear tests? This may bring a rise of biogenetic processes—i.e., a massive origin of viruses of various kinds.

Pandemics of influenza swept the world at irregular intervals in 1781, 1832, 1847, 1889, and 1918, starting at definite geographical foci to spread throughout the globe. We should find out from astronomical and cosmographic references what happened at those times in the way of sun-surface changes or cosmic radiation, and what changes were observed in the atmosphere.

The density of bacteria is greatest at ground-level and gets smaller and smaller with increasing height. But the amount of virus is said to get greater with increasing height. It is therefore very important to study whether or no there are enormous numbers of viruses growing in the stratosphere and ionosphere.

On the earth there are various differences in the level of intensity of cosmic radiation. These differences change with geographical parameters and with the altitude. We should see whether this correlates with the density of virus in the atmosphere.

We dare not neglect any researches emerging from these possibilities.

Wroclaw, Poland. S. M. EIMERL-WITKOWSKI.

1. Pirie, N. W. *Lancet*, 1957, i, 1246.

SHOCK AND CEREBRAL DAMAGE

SIR,—In his valuable and thought-provoking article of Sept. 14 Dr. Bedford says "Whatever the true incidence may be, the case-reports given above clearly establish that an irreversible gross dementia may occasionally be the aftermath of 'shock-states' due to cardiac infarction, pneumonia, and severe diarrhœa in elderly people."

Since only a limited number of the elderly who suffer "shock-states" emerge with gross irreversible cerebral damage and a much larger number do not, can it not be that the "shock-state" is secondary to some sudden intracranial change which triggers off the "shock-state" which in turn causes the cardiac infarction in the atheromatous, and coma in the toxic and dehydrated?

Is that not the logical sequence since all "shock-states" do not cause dementia? If this were so some degree of protection might be expected from chlorpromazine.

There must be a large number of institutional inmates who are and have been on this drug, and it would be interesting to know whether there are any figures which reflect the incidence of "shock-states," cardiac infarction &c., since its introduction, relative to the previous incidence or to the incidence in those not receiving it.

Lethbridge, Alberta. J. SHEGOG RUDDELL.

FAINTING AND CEREBRAL DAMAGE

SIR,—Twenty-five years ago, when I was a student, I was taught the administration of nitrous oxide. Our instructors always stressed that no matter how black the patient became there was no danger, but that at the first sign of pallor the anæsthetic should be discontinued and the patient laid flat.

It would appear that with the introduction of more scientific methods of anæsthesia this pearl of wisdom has been lost only to be rediscovered by Dr. Bourne (Sept. 14) and Professor Sharpey-Schafer, and a scientific explanation provided.

St. Thomas's Hospital, London, S.E.1. J. H. HOVELL.

CORTISONE AND HYPOGLYCÆMIC SHOCK

SIR,—The interesting observations reported by Dr. Barta and Dr. Simon (Oct. 19) are consistent with the effects of cortisone and of corticotrophin administered during the late stages of deep insulin coma, and in treating cases of delayed recovery from therapeutic insulin coma. Neither hormone would terminate normal insulin coma, but following the administration of either hormone coma could be safely maintained for an hour longer than the usual therapeutic period and still be promptly and successfully interrupted by glucose administration. Either hormone is of value in treating prolonged insulin coma provided that the blood-sugar is not subnormal, patients often being roused out of coma in 15–30 minutes after administering the hormone. Even if patients do not recover in this short time, their blood-sugar is stabilised so that relapses into deep hypoglycæmia are prevented.[1]

These effects appeared to be related more to the anti-insulin properties of cortisone and corticotrophin than to their effects on the plasma-electrolytes. In other words, it is the glucocorticoid and not the mineralocorticoid property of the hormone that is the effective factor. This would explain the lower potency of prednisone as compared with cortisone in your correspondents' experiments, and why steroids with a predominant effect on the electrolytes are not likely to be as effective as cortisone in treating prolonged insulin coma.

1. Kay, W. W. *Brit. med. J.* 1956, ii, 256; meeting of Royal Medico-Psychological Association, London, February, 1957; Second International Congress of Psychiatry, Zurich, September, 1957.

Cortisone in the relatively high doses used by Dr. Barta and Dr. Simon is likely to depress the activity of the anterior lobe of the pituitary and of the adrenal cortex and so make their rabbits more sensitive to insulin. This would explain the increased blood-sugar falls due to insulin in their cortisone-treated rabbits. It is difficult, however, to understand why hypoglycæmic shock did not occur with insulin in their cortisone-treated rabbits, during cortisone treatment, if the blood-sugar fell to shock-producing levels. Cortisone appears to have some form of stimulating effect on the cerebral cortex at normal or raised blood-sugar levels, but there is no clear evidence that it has this effect or will mitigate the effects of hypoglycæmia at coma-producing blood-sugar levels.

The Mental Hospitals' Group Laboratory, West Park Hospital, Epsom, Surrey. W. W. KAY.

APOPLEXY OF YOUTH

SIR,—A recent experience in the postmortem room prompts me to add another cause of apoplexy in young adults to those mentioned in your leading article of Oct. 5.

The subject of the necropsy was a 16-year-old schoolboy who was admitted to hospital in deep coma after he had collapsed suddenly at his home while going to bed. A few days previously he had complained of headache but otherwise he had been well and had taken full part in school activities. Clinical findings included a blood-pressure of 160/90 and heavily blood-stained cerebrospinal fluid. He died shortly after admission.

At necropsy a large fresh hæmorrhage was found in the substance of the left cerebrum, mainly in the region of the internal capsule. The heart weighed 450 g. and the enlargement was due to hypertrophy of the left ventricle, the wall of which was up to 2·5 cm. thick. The medulla of the right adrenal gland was replaced by a rounded phæochromocytoma 3 cm. in diameter.

The cause of apoplexy in this youth was clearly hyperpiesis due to an occult physiologically active phæochromocytoma.

Kent and Canterbury Hospital, Canterbury. G. B. FORBES.

NERVOUS SYSTEM IN PORPHYRIA

SIR,—Your annotation (Sept. 14) fails to mention relevant experimental work which renders unlikely the suggestion that a neurotoxic agent is responsible for the nervous and mental symptoms in porphyria. It has been shown that purified porphyrins, acute-porphyria urine, and porphobilinogen are pharmacologically inactive; there is moreover no evidence that a circulating vasoconstrictor substance exists in this disease.[1] This view is strengthened by the production of an experimental porphyria in rabbits, rats, and fowls by the non-hypnotic substance allyl-isopropyl acetamide.[2] The animals excreted large amounts of porphyrins and porphobilinogen, but showed no clinical features in common with human acute porphyria, apart from constipation and loss of weight.

In acute porphyria there is a fundamental disturbance of pyrrole pigment metabolism which has its site in the liver.[3] Associated with this there may be a related disturbance in the metabolism of the nervous system, of which demyelination is the pathological expression. The exact nature of this association is not clear. The porphyrin-like structure of vitamin B_{12}[4] demonstrates that at least one tetra-pyrrolic substance is essential for myelination of the nervous system. Some other tetrapyrrole, formed in the liver and of which porphobilinogen is a precursor, may also be essential for the nutrition of the myelin of the nervous system. A metabolic "block" to the formation of this substance in the liver would lead to an excessive production and urinary excretion of porphobilinogen[5] and to demyelination of the nervous system. A genetically determined deficiency in a specific enzyme, variable in the expression of its severity, might explain the "block." The intermittent nature of the disease would then be related to the effect of other factors—e.g., endocrine changes, infection, and barbiturates—on this abnormally sensitive pathway.

The neuropsychiatric features of acute porphyria, as well as its pathological chemistry, can be explained on this hypothesis.

Department of Medicine, Gardiner Institute, Western Infirmary, Glasgow, W.1. A. GOLDBERG.

1. Goldberg, A., Paton, W. D. M., Thompson, J. W. *Brit. J. Pharmacol.* 1954, **9**, 91.
2. Goldberg, A., Rimington, C. *Proc. Roy. Soc. B.* (1955) **143**, 257.
3. Goldberg, A. *Lancet*, 1954, ii, 172.
4. Bonner, R., Cannon, J. R., Johnson, A. W., Sutherland, I., Todd, A. R. *Nature Lond.* 1955, **176**, 328.
5. Goldberg, A. *Lancet*, 1954, ii, 1095.

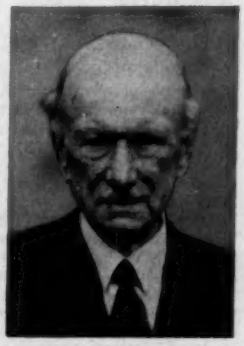
Obituary

ARTHUR JOHN CLEVELAND

O.B.E., M.D. Lond., F.R.C.P.

Dr. A. J. Cleveland, consulting physician to the Norfolk and Norwich Hospital, died on Oct. 8 at the age of 85.

He was born in Brighton, the son of a solicitor to the Government in Bombay. From Clifton College he went to Guy's Hospital, where, after qualifying in 1897, he held posts as house-physician, medical registrar, and medical tutor. During the five years he held these posts he took the M.D. and the M.R.C.P. In 1902 he settled in Norwich in general practice, and two years later he was appointed to the Norfolk and Norwich Hospital as its first radiologist. In 1905 he was elected assistant physician to the hospital. During the 1914–18 war he was attached as physician, with the rank of major, to the Thorpe Military Hospital, and he was appointed O.B.E. for his services.



Cleveland's chief interest was neurology, and until a year or so before his death he acted as consultant in neurology to the Ministry of Pensions; a lesser interest was dermatology. But it is as an outstanding hospital administrator that he will be remembered. He was chairman of the board of governors of the Norfolk and Norwich Hospital during the critical years from 1938 to 1943. He played an important part in creating special departments and, with the late Frank Inch, secretary and house-governor, in founding a private patients' department. He was active in setting up a scheme of insurance whereby people of moderate means could obtain specialised treatment in a nursing-home. His history of the hospital from 1900 to the end of 1946 brought the earlier history by Sir Peter Eade up to date.

Largely as a result of the impression he had made in hospital management, Cleveland, though taking no part in local politics, was, in 1943 at the age of 70, elected Lord Mayor of Norwich—an office which he filled with energy and dignity. For ten years he was a director of the Norwich Union Insurance Societies. As an after-dinner speaker he was outstanding, and his name on a toast list never failed to attract a large audience to any medical gathering.

B.B.M. writes:

Gifted with a logical, analytical, and, above all, a far-seeing brain, Cleveland was at his best on committee and was an outstanding chairman. He held strong views on the importance of medical staff influencing the policy of the hospital. He was forthright in putting forward the views of the staff and adamant in opposing exploitation of their services or invasion of their rights. To him in large measure was due the cordial and

sympathetic relationship between the board and the honorary medical staff that was such a feature of the Norfolk and Norwich Hospital.

Dr. Cleveland's wife died two years ago, and he leaves a son and daughter. The memorial service held in Norwich Cathedral on Oct. 11 was attended by City dignitaries and many of his friends and colleagues.

GEOFFREY WALTER BODEN

B.Sc.Lond., F.R.C.P., F.F.R., D.M.R.

Dr. Geoffrey Boden, physician in charge of the radiotherapy department of The London Hospital, died on Oct. 18 at the age of 51.

After taking a B.Sc. with honours in 1928, he turned to medicine and qualified from St. Bartholomew's Hospital, where he held house-appointments. He later began to specialise in radiotherapy and worked for a time in the radiotherapy departments at Barts and St. George's, before joining the staff of the Christie Hospital and Holt Radium Institute, Manchester. There he rapidly made a name for himself as one of the ablest radiotherapists in the country. In 1950 he was appointed physician in charge of the radiotherapy department of The London Hospital, and in 1952 he was awarded the Twining medal of the Faculty of Radiologists for a fellowship thesis of outstanding merit. In May of this year he was elected a fellow of the Royal College of Physicians.

W. S. writes:

Soon after his appointment to the staff of The London, Boden applied himself vigorously to the task of reorganising the radiotherapy department. With his flair for administration and his persuasiveness in committee, he readily accomplished this herculean task, and from a rabbit-warren of rooms there emerged a new streamlined department with a fine radium laboratory. The cacophonous sounds of demolition which oppressed his colleagues evoked from him an enraptured smile. During this period he was interested in the problem of the apparent discrepancy in the measurement of the röntgen in different centres, and it was largely due to him that anomalous values were exposed, serious errors corrected, and the whole system of measurement in clinical practice placed on a true foundation. Another of his important contributions to radiotherapy was an investigation of radiation myelitis, and the importance in treatment planning of avoiding heavy irradiation of the spinal cord.

There are few who could have progressed so smoothly as he did from the more restricted discipline of the specialised hospital to that of the teaching hospital; but he loved the more liberal atmosphere of a teaching hospital, and he soon made his influence felt. He was full of farsighted plans for the development of radiotherapy both at The London and throughout the region. He was a consummate committee man. The radiotherapist at a teaching hospital is always in the unenviable position of trying, like the Baron Munchausen, to raise himself by his own bootstraps. This incredible feat Geoffrey Boden was always able to bring off. Like all skills with Boden, it seemed easy; the opposition floundered, capitulated, and melted like snow from a ditch; but the onlooker could not see, though the percipient might surmise, the careful investigation, organisation, and planning which had preceded such an easy victory. He was a born negotiator.

He was quick to realise the clinical advantages of supervoltage therapy, and thanks to his efforts The London was the first teaching hospital to be equipped with a 1000-curie telecobalt unit. It was characteristic of the man that this equipment was not used for the treatment of patients until the output and dosage distributions had been the subject of protracted physical measurement. The clamour of clinicians to have their patients treated went unheeded until the treatment could be planned accurately and effectively. Treatment planning was a subject to which he had devoted much thought, both at Manchester, where he developed an elegant trunk-bridge method, and later at The London, where he replanned and systematised the wedge-filter technique.

Although he had an absorbing interest in the diagnosis and treatment of malignant disease in all its forms, his main interest lay in the reticuloses. Here, his powers of clinical diagnosis and prognosis were outstanding. Anyone can give a poor prognosis, but Boden could give a good prognosis with uncanny accuracy.

He was a keen swimmer and an enthusiastic follower of rugby football. His mind was alert and perceptive, that of the intellectual rather than the athlete. By nature a traditionalist, he liked things done in the approved manner. As an able physician and distinguished radiotherapist he will be remembered with abiding affection by his colleagues and patients.

Dr. Boden leaves a widow and two daughters.

ALEXANDER DEWAR WILLIAMSON

M.B. Glasg., F.R.C.S.E., D.O.M.S.

Mr. Alexander Williamson, who retired earlier this year from his appointments as ophthalmic surgeon to the General Hospital, Singapore, and as lecturer in the University of Malaya, died on Aug. 18.

He was the son of a Glasgow seedsman, and he was educated at Glasgow High School and University. After graduating M.B. in 1927 he held house-appointments at Glasgow Western Infirmary and Eye Infirmary. Later he was awarded the McCunn research scholarship, and while holding a clinical assistantship at the Eye Infirmary he took the D.O.M.S. in 1930 and the F.R.C.S.E. two years later. After an operating tour with Dr. McPhail's mission hospital in India he was appointed, in 1935, ophthalmic surgeon and university lecturer in Singapore. In the early years he ran his department alone. Later he trained Asian medical officers and encouraged them to come to England for postgraduate study. His beds, at first scattered through the General Hospital, were increased and gathered together, and now the ophthalmological school has an up-to-date air-conditioned unit with 75–80 beds.

Mr. Williamson continued to practise among the local population in the first year of the Japanese occupation; he was then interned until the liberation. After only a short convalescence in this country he returned to Singapore and took up the threads of his work. In 1949 he was appointed an honorary consultant to the Army in Singapore. He was also consultant to the Singapore Association for the Blind. During the post-war years, with Dr. P. C. Leong, he studied keratomalacia, which in Singapore was to be found in apparently well-nourished infants as well as among the under-nourished and marasmic. Their investigations led to the fortification of all tinned and dried milks and the control of the disease in Malaya.

When Mr. Williamson retired last April he left as his memorial a department which was completely staffed by his own former students. A colleague writes:

Williamson was an excellent linguist, widely read, and his mind was stored with valuable information. He was good-natured and kindly, with a forthrightness and directness which were characteristic, and sometimes, in his early years, misunderstood. He greatly enjoyed his work, and loved, particularly, the old Chinese women with their direct, quite unabashed, claim for immediate attention. Many youngsters were helped in their schooling, and many old people will miss his help and his cheerful badinage in Malay, or the mixture of Chinese dialects he had picked up.

Mr. Williamson leaves a widow, who is also an ophthalmologist.

DAVID LANDSBOROUGH

M.A. Glasg., M.D. Edin.

Dr. Landsborough died at Redhill, Surrey, on Oct. 11, in his 88th year. He was one of three brothers to enter the medical profession; and he came of a family whose other strong associations were with the Presbyterian Churches and with the study of natural history. His paternal grandfather and his father, both also called David, were Ayrshire ministers and naturalists of repute, the former being the author of works on British zoophytes and on the natural history of Arran. An uncle, William Landsborough, has left the family name on the maps of Australia and New Zealand, and a first cousin on the paternal side was Sir J. Arthur Thomson, professor of natural history at Aberdeen.

Having qualified in 1895, Landsborough held a house-appointment at the Albert Dock Hospital, London. From that time the whole of his professional life was spent in Formosa, where he won great respect as a medical missionary of the English Presbyterian Church. After his retirement he lived at Redhill for many years, and was known as a man of fine character and most kindly disposition. His son, another David, is following in his footsteps as a medical missionary in Formosa; he is survived also by his wife and a daughter.

Notes and News

EMPIRE RHEUMATISM COUNCIL

SPEAKING as president of the Empire Rheumatism Council, at a Mansion House dinner on Tuesday to launch an intensive programme of research, the Duke of Gloucester suggested that industry could help in a campaign against rheumatism. Thanks largely to the work of the Council, he said, it was now appreciated that the effect of rheumatism on the lives of the people and upon the industry of the country was much more sinister and widespread than that of other diseases, for more inefficiency and absenteeism was caused by rheumatism than possibly any other complaint. The progress made in recent years demonstrated that, if research could be intensified, a great deal more could be done. The Council felt that it was perhaps half-way to achieving its goal—namely, the more successful treatment of rheumatism. A special fund had been launched this year by Lord Astor of Hever, and it was supported by many leading industrialists. The Council was most grateful to Lord Astor and to those who had supported the Fund for all they had done.

Dr. W. S. C. Copeman, chairman of the Council, referred to some of the ways in which, it was hoped, research would be extended under the ten-year programme. The activities of the Council's mobile field unit, which can carry out surveys in towns, factories, or selected districts, should be trebled. More research fellowships and travelling scholarships were needed, and more university chairs or readerships were essential if full research progress was to be made. Much expensive additional equipment was urgently required in research laboratories: items such as the electron microscope were very costly but were absolutely necessary.

To carry out a programme of this kind, the Council needed at least £250,000, probably more as costs continued to rise. During a recent visit behind the Iron Curtain Dr. Copeman had been told that the State industries contributed a toll of 1% of their profits for this very thing. If it seemed to them worth while, surely it must be so also in this country?

DYSENTERY

IN his presidential address to the Royal Society of Tropical Medicine and Hygiene on Oct. 17, Brigadier J. S. K. BOYD said that among Europeans living in the tropics bacillary dysentery was more important than amœbic dysentery. But, because it rarely became chronic and was easily cured by modern drugs, it had latterly had less attention than amœbic dysentery which, unless very thoroughly treated, tended to persist. The emergence of strains of dysentery bacilli which were resistant to sulphonamide and antibiotics might jeopardise the present satisfactory therapeutic position; but such resistance had not yet created any problem among organisations such as the British Army in which large numbers of persons were overseas.

In the first world war bacillary and amœbic dysentery accounted for 22–64% of admissions to medical units in Salonika, Egypt, and Mesopotamia. From Gallipoli between August and October, 1915, a high proportion of the 120,000 casualties had been caused by dysentery, and it was claimed that 65% of the dysenteric infections had been caused by amœbæ. But Wenyon and O'Connor found that of convalescents evacuated from Gallipoli only 6·5% were carriers of *Entamœba histolytica* cysts—a proportion not much higher than the 4·5% found among 11,037 with no history of dysentery. From this it was concluded that the incidence of amœbic dysentery among the casualties at Gallipoli had been overestimated.

Whereas amœbic infection was responsible for a considerable proportion of the steady admissions of dysenteric patients all the year round, bacillary dysentery occurred in epidemic waves mainly in late summer and autumn and to a lesser extent in spring. Everywhere, however, it was the predominant type of the infection. Between the two world wars the work of Manifold had led to the greater appreciation of the importance of bacillary dysentery as a cause of ill health in the British Army in India.

Brigadier Boyd recalled how in 1929, when inagglutinable Flexner dysentery bacilli presented an unsolved problem, he had one morning found two types of colony on a plate on which a culture of one of the inagglutinable types had been made. One of the colonies was smooth, like the parent strain, and composed of inagglutinable bacteria, whereas the other, which was semi-rough, was highly agglutinable. It became clear that this strain had undergone degradation and was producing two different types of bacteria. Those with smooth colonies possessed a specific surface antigen which rendered them inagglutinable by the antisera of known strains. The second type, which produced rough colonies, had lost this surface antigen, and an underlying group antigen had consequently been exposed. Its components were common to other members of the Flexner series; so it had become agglutinable by their antisera. Three new types of organisms had been identified by their surface antigen, and the few which remained, each with a specific antigen but lacking the common group antigen, had been classified as a separate species.

In the Middle East during the second world war, a type of bacillary dysentery slow in onset and progress but quite unamenable to treatment had been recognised as a cause of mortality. Most of the more serious cases were caused by Shiga's bacillus but a few Flexner infections also ran a very long course and had been difficult to cure. Antitoxin and bacteriophage had been ineffective as therapeutic or prophylactic agents. The situation had been completely and dramatically altered by the introduction of sulphaguanidine.

IRISH HEALTH SERVICES AND HOSPITALS

HAVING previously written on hospitals and health services in France,[1] Sweden, and Italy, Mr. John Dodd now describes those of Eire.[2]

After some generalisations and quotations about Eire and Anglo-Irish relations, and about the famous sweepstakes which have provided capital for building hospitals, he briefly reviews the scope of the health services. Health authorities are bound to provide free general medical and dental services, drugs, and appliances, to those who cannot provide them "by their own industry or other lawful means." Hospital and specialist care is given free (except for a charge of 6*s*. a day to inpatients) to insured persons, to people with incomes below £600 a year, to others who cannot afford treatment, and to children at national schools. There are also maternity and infant-welfare services. The Act provides that no person need accept services, and those who do accept them need not submit to any examination or treatment which is contrary to the teaching of their religion.

Most of the report is devoted to factual information about individual hospitals and Mr. Dodd's account of what he saw is supplemented by appendices from official and other sources. But the whole is interlarded with his personal and highly controversial opinions.

FILMS AND CEREBRAL PALSY

AT Guy's Hospital on Oct. 19, the National Spastics Society and the Scientific Film Association held a conference on the use of films in cerebral-palsy centres. The convener of the meeting was Dr. R. C. Mac Keith, vice-president of the Association, and a member of the medical advisory committee of the National Spastics Society. The meeting was attended by some 40 people, among whom were several experts on films and cerebral palsy, and all the heads of N.S.S. schools and centres and workers in charge of photography.

Dr. Paul E. Polani, director of medical research, N.S.S., outlined the objects of filming in cerebral palsy, and Dr. C. P. Stevens, director of N.S.S., said that simple facilities for filming and projecting films were available at five of the nine schools and centres of the N.S.S. Dr. K. W. Nicholls Palmer, consultant in physical medicine, Colchester, discussed and demonstrated difficulties and successes in filming, and pointed out the therapeutic value, for the patients, of films that showed them their capabilities in the course of diversionary activities. Mr. C. E. Engel, of the department of medical illustration, Guy's Hospital, emphasised the relation between objectives in filming and techniques, and discussed and demonstrated cinematographic methods for the analysis of movements. Dr. Brian Stanford, chairman of the medical group of the Royal Photographic Society, talked about simple equipment and techniques that could help the amateur photographer in making clinical records of patients with cerebral palsy.

The conference made it clear that films could be used for research on movement and for the assessment of different forms of treatment. Or they could be used for teaching the clinical features of cerebral palsy and for teaching treatment and management. Again, they could be used therapeutically as a boost to the morale of patients, parents, and therapists.

1. See *Lancet*, 1955, ii, 301
2. Copies may be had from the British Hospitals Contributory Schemes Association, Royal London Buildings, Bristol, 1 (10*s*. post free).

Standardised filming at "cerebral-palsy" schools and centres could provide useful clinical records of some value in clinical research and in the recording of changes following treatment. The films should show maximum motor ability of patients faced with simple tasks of everyday life; and technically and financially, black-and-white photography should be employed, relying where possible on natural light.

TRANQUILLISERS

ON Oct. 9, in a paper to the Manchester Medical Society's section of medicine, Dr. E. HOWARD KITCHING said that the present phase of advance in psychiatry seems to be a chemical one and has resulted in the production of an immense number of new drugs, of which the most outstanding are those called tranquillisers. The forces which influence the use of these drugs lie with the manufacturer, the doctor, and the patient, all of whom have a strong motive in their consumption. Claims made for these drugs are based on evidence which is often very slender. Experiments on animals are capable of much misinterpretation, but the results are often used to promote the use of tranquillisers.

There are four main groups of tranquillisers. The phenothiazine group, of which the main representative is chlorpromazine, is of much value in disturbed and noisy psychotic patients but is of little value in neurotics. Reserpine, a representative of the second group, has a broadly similar action. Both drugs are thought to act possibly on the activating sytem in the brain and on the hypothalamus, possibly through their effect on serotonin. In Dr. Kitching's opinion, the other two groups (pipradrol derivatives and the meprobamate group) seem to have very little clinical use generally and exaggerated claims have been made for them. He concluded by saying that these drugs are potentially dangerous and their usefulness is still in doubt. At present, he felt, there is a marked discrepancy between their actual performance, their price, and the claims made for them.

TELEVISION PROGRAMME ON ALCOHOLISM

CHRONIC alcoholism was the subject of a B.B.C. television programme on Oct. 15. "Rock Bottom" (written by Colin Morris, produced by Gilchrist Calder) showed the impact of a sufferer on his wife and children, on his neighbours, and on his employer. Previous hospital treatment had failed—"The psychiatrist never even mentioned booze to me, so why should I mention it to him?"—but after a particularly severe bout he agreed to meet a member of Alcoholics Anonymous. Eventually he was admitted to a mental hospital and, after a relapse, began the hard road towards recovery. This excellent documentary gave a lot of information in the dialogue. The serious problem of providing adequate inpatient treatment for all patients was particularly stressed. The difficulty of approach to these patients, and the importance of gaining their full cooperation before any treatment can be started, were well conveyed.

MEDICAL FILMS

FOUR films made by Glaxo Laboratories Ltd. illustrate the extensive research needed in the development and commercial preparation of drugs and vaccines. They were designed primarily for overseas audiences who are unable to visit the laboratories, and give a fascinating picture of the years of work involved, and of some of the problems encountered, in the development of a product.

In *Thought for Food* (16 mm., sound, colour, 12 minutes, Great Britain, 1957) a food is developed which contains many nutrients, yet can be prepared easily for drip-feeding to a patient. Each new substance added led to such difficulties as diminished solubility, discoloration, and deterioration in storage, and the film well conveys the drama of the patient attempts to overcome these.

Defence Against Poliomyelitis (16 mm., sound, colour, 12 minutes, Great Britain, 1956) deals with the production and use of poliomyelitis vaccine. The preparation of monkey-kidney tissue-medium and its inoculation with the virus strains are described. After incubation, the living organisms are eliminated and the resulting fluids are blended and tested. The stages in the production of the vaccine are well defined, and the importance is emphasised of constant checking for potency and safety. This film is valuable for public-health and family doctors, and will be of interest to a much wider medical audience.

A Vitamin Emerges (16 mm., sound, colour, 15 minutes, Great Britain, 1957) tells the story of the twenty years' research required to isolate and synthesise the anti-pernicious-anæmia factor in liver. The complexity of the problems to be solved and the wide variety of techniques involved at each stage are well conveyed, but, as the story is complicated, such irrelevancies as details of separation chromatography and of cobalt-deficiency anæmia in sheep could have been omitted. Nevertheless, the film is of interest to most medical audiences.

Longer Life for B.C.G. (16 mm., sound, colour, 15 minutes, Great Britain, 1957) deals with the development of freeze-dried B.C.G. vaccine, its production on a commercial scale, and the method of preparing it for administration. Here physical conditions must be controlled accurately to avoid killing the sensitive vaccine. The exposition is straight-forward and each stage is clearly described, though in places the picture seems to bear little relationship to the commentary.

The films are available, free of charge, from Glaxo Laboratories Ltd., Greenford, Middlesex.

POLISH MEDICAL SCHOOL OF EDINBURGH UNIVERSITY

AMONG the Poles who escaped to Britain in the late war were many medical students and doctors. In March, 1941, Monsieur W. Raczkiewicz, President of the Polish Republic, opened the Polish medical school in Edinburgh.[1] The first degrees were conferred in December of that year; all told, the school produced 228 doctors. Its history closed on Sunday, Oct. 13, when all documents relating to its origin were deposited by Prof. J. Rostowki, the dean, in the archives of the General Sikorski Historical Institute, Banknock, Stirling.[2]

APPROVED NAMES FOR DRUGS

THE British Pharmacopœia Commission has issued the following new list of approved names:

Approved name	*Other names*
Acepromazine	2-Acetyl-10-(3-dimethylaminopropyl) phenothiazine. Notensil is the maleate.
Bialamicol	3:3′-Diallyl-5:5′-bisdiethylaminomethyl-4:4′-dihydroxydiphenyl. Camoform is the hydrochloride
Buphenine	1-*p*-Hydroxyphenyl-2-(1-methyl-3-phenylpropyl-amino)propanol. Perdilatal is the hydrochloride.
Captodiame	*p*-Butylthiodiphenylmethyl 2-dimethylaminoethyl sulphide. Covatin is the hydrochloride.
Cyclomethycaine	3-(2-Methylpiperidino)propyl *p*-cyclohexyloxybenzoate. Surfacaine is the sulphate; Surfathesin is the sulphate.
Dequalinium Chloride	Decamethylenebis-(4-aminoquinaldinium chloride). Dequadin.
Dicyclomine	2-Diethylaminoethyl dicyclohexyl-1-carboxylate. Wyovin is the hydrochloride.
Diloxanide	*N*-Dichloroacetyl-*p*-hydroxy-*N*-methylaniline Entamide.
Edrophonium Chloride	Ethyl-*m*-hydroxyphenyldimethylammonium chloride. Tensilon.
Hedaquinium Chloride	Hexadecamethylenebis-(2-*iso*quinolinium chloride). Tequil.
Hydroxydione Sodium Succinate	Sodium 21-hydroxypregnane-3:20-dione succinate. Viadril.
Liothyronine	(-)-Tri-iodothyronine. Tertroxin is the sodium derivative.
Mecamylamine	3-Methylamino*iso*camphane. Inversine is the hydrochloride; Mevasine is the hydrochloride.
Melphalan	*p*-Di-(2-chloroethyl)amino-L-phenylalanine.
Methotrimeprazine	10-(3-Dimethylamino-2-methylpropyl)-2-methoxyphenothiazine.
Penthienate	2-Diethylaminoethyl α-hydroxy-α-*cyclo*pentyl-α-(2-thienyl)hydroxyacetate. Monodral is the methobromide.
Phenoxybenzamine	2-(*N*-Benzyl-2-chloroethylamino)-1-phenoxypropane. Dibenyline is the hydrochloride; Dibenzyline is the hydrochloride.
Pipenzolate	*N*-Ethyl-3-piperidyl benzilate. Piptal is the methobromide.
Thiopropazate	1-(2-Acetoxyethyl)-4-[3-(2-chloro-10-phenothiazinyl) propyl]piperazine.
Trimperazine	10-(3-Dimethylamino-2-methylpropyl) phenothiazine.

University of London

At recent examinations the following were successful:

M.D.—E. H. Cooper, G. E. Flatman, R. A. Parker, A. B. Tompkins.

University of Otago

Mr. G. J. Fraenkel, surgical tutor in the University of Oxford, has been appointed to the Ralph Barnett chair of surgery in the university.

1. See *Lancet*, 1941, i, 459.
2. *Scotsman*, Oct. 14, 1957.

Royal College of Physicians of London

On Oct. 18 Dr. Donald Hunter delivered the Harveian oration. Afterwards the Moxon medal was presented to Sir John Parkinson.

In presenting him, the Registrar said that keen perception of what would be of help to the patient has always guided Sir John's researches into the diagnosis of heart-disease. His investigation of cardiac pain and its relation to coronary arterial disease will have abiding value, and his successful endeavours to introduce radiological examination of the heart as a means of more accurate diagnosis have been of inestimable worth. Through his lectures and his clinical teaching, as well as his writings, he has conveyed his findings in a clear and succinct fashion; for he has a special aptitude for conveying facts worth remembering in words that are memorable. "The College delights to honour a great physician, a scientist, a teacher—in truth a great man."

On Thursday, Nov. 7, at 5 P.M. Prof. A. J. Lewis will give the Bradshaw lecture. His subject will be Between Guesswork and Certainty in Psychiatry.

Royal College of Surgeons of Edinburgh

At a meeting of the college on Oct, 16, with Sir Walter Mercer, the president, in the chair, the honorary fellowship was conferred on Sir Harry Platt and Prof. R. I. Harris.

The following were admitted to the fellowship:

J. J. Adendorff, R. G. Azizkhan, K. S. Baichwal, B. O. Barry, J. R. Boulle, Morris Brukin, Ross Campbell, E. W. Carr, William Chanen, C. G. Clark, P. H. Corkery, F. V. Cosentino, A. J. Dark, A. C. W. Mosbergen Da Roza, W. J. Garrett, W. E. Gillies, L. R. H. Gracey, I. H. Greer, Samir Guergawi, Sitha Gupta, E. K. Handal, T. M. Hannigan, C. A. Holborow, R. L. Huckstep, P. B. Humphris, I. M. Jassim, Thomas Joseph, J. N. Joshipura, Isidore Kaplan, S. D. Khandwala, J. D. L. Kirstein, Leslie Klenerman, Joseph Kohari, D. R. Lee, P. A. Limbers, Adrian Litton, G. M. McFadden, D. O. N. McIntyre, G. P. McNair, Padmanabhen Narendran, M. A. Nyunt, W. B. Pandit, W. O. S. Phillipps, J. W. Pont, O. F. Prior, Susila Rajagopalan, C. B. Saunders, J. N. McM. Schofield, Li Jin Seow, R. L. Shah, A. R. Shepherd, Daryao Singh, Dennis Smyth, Hariharan Srinivasan, K. J. W. Stump, R. D. Suckling, Lindsay Symon, G. N. Takla, P. K. Tamaskar, R. M. Varma, Prem Virmani, F. E. Wheeler, J. H. Williams, William Wilson, M. N. Zaman.

Royal College of Obstetricians and Gynæcologists

On Friday, Nov. 22, at 5 P.M., Mr. Bethel Solomons will deliver the William Meredith Fletcher Shaw lecture. His subject will be the history of infant welfare. Tickets may be had from the secretary of the college, 58, Queen Anne Street, W.1.

Appointment by Minister of Health

Mr. Derek Walker-Smith, the Minister of Health, has appointed Mr. Robert Mathew, M.P., to be his parliamentary private secretary.

Royal Society

Prof. Wilson Smith will give the Leeuwenhoek lecture, at Burlington House, Piccadilly, London, W.1, on Thursday, Nov. 7, at 4.30 P.M. His subject is virus-host cell interactions.

Royal College of Midwives

The new headquarters of the college in Mansfield Street, London, W.1, were opened by the Duchess of Kent on Oct. 16. They have cost £150,000 to build, endow, and equip, of which over £132,000 has already been raised.

British Society for Immunology

A meeting of this society will be held at the Wellcome Foundation, 183, Euston Road, London, N.W.1, on Friday and Saturday, Nov. 15 and 16. On Friday at 10 A.M. there will be a symposium on immunohæmatology, when Prof. J. V. Dacie will be in the chair.

New Fuel Research Station

Atmospheric pollution and its prevention are among the studies planned for the new fuel research station, at Stevenage, of the Department of Scientific and Industrial Research. The old research station at Greenwich, opened in 1917, will continue its work; it would have been uneconomic to add to its buildings.

International Collegium for Neuro-Psycho-Pharmacology

At a meeting held in Zurich on Sept. 3 during the Second International Congress for Psychiatry, investigators from various countries decided to found an International Collegium for Neuro-Psycho-Pharmacology, to promote research and the exchange of ideas through symposia and in other ways. Prof. E. Rothlin (Switzerland) was elected president. Further information may be had from Dr. P. B. Bradley, department of experimental psychiatry, The Medical School, Birmingham, 15.

Dublin University Biological Association

At the annual meeting of this association on Saturday, Nov. 9, at 8 P.M. in the Graduates' Memorial Building, Prof. W. J. E. Jessop, the president-elect, will deliver his inaugural address. It is entitled What is Social Medicine?

Liverpool Medical Institution

On Oct. 10 Dr. Margaret Thomas was installed as president in succession to Prof. Bryan McFarland, and gave an inaugural address entitled The Artist's Contribution to Medicine. She is the first woman to be elected president since the institution was founded in 1837.

Agricultural Research Council

The council have appointed Dr. J. H. Gaddum, F.R.S., professor of materia medica in the University of Edinburgh, as director of the Institute of Animal Physiology, Babraham, Cambridge, in succession to Dr. I. de Burgh Daly, F.R.S., who retires on Sept. 30, 1958, on reaching the age-limit.

Royal Society of Health

On Thursday, Oct. 31, at 2.30 P.M., in the Caxton Hall, Westminster, S.W.1, this society will hold a conference on health education in relation to smoking and lung cancer. Mr. R. W. Raven, Prof. Andrew Semple, and Dr. John Burton will give short papers. Dr. J. A. Scott will be in the chair.

Presentation to Lord Inman

On Oct. 15 Lord Inman, chairman of Charing Cross Hospital and Medical School, was presented with his portrait to mark his thirty-six years' work for the hospital. The presentation was made by Lord Justice Morris, a member of the board of governors. The portrait was painted by Mr. Norman Hepple, A.R.A., R.P., and will eventually hang in the boardroom of the hospital.

Anglo-Danish Fund for Tuberculosis

This fund was started in 1951 to send to Denmark for treatment children between the ages of 5 and 14 with pulmonary tuberculosis who were on the waiting-list of British sanatoria. Since then 392 children from many parts of the British Isles have been sent to Denmark at a cost of about £127,000. They stayed at Vordingborg sanatorium in South Zealand. The last batch of 22 children, who returned to this country last month, were not tuberculous but had chronic respiratory conditions. There have been only 2 relapses among the 370 who had tuberculosis. The fund has now been wound up as the British waiting-lists have been cleared.

The London Hospital

Presiding at the annual dinner on Oct. 10, Sir Alun Rowlands said that in 1906, when he went to The London, the prospective student could choose the medical school he preferred. Some outstanding personalities had joined the hospital and medical college ten to twelve years earlier, and big developments had taken place. From University College, Arthur Keith and Leonard Hill arrived in 1895 and William Bulloch in 1897. Sydney Holland (afterwards Lord Knutsford) became a member of the house-committee in July, 1896, and its chairman in December; and in the same year E. W. Morris (later house-governor) was appointed head of the dispensary. The physiology department had already attracted Robert Hutchison, J. J. R. Macleod, Major Greenwood, and Martin Flack. In 1897 Sydney Holland started the rebuilding of the hospital, and it was completed within ten years at a cost of about a million pounds—all raised, in addition to current expenditure, by voluntary contributions. With Miss Eva Luckes, the matron, Lord Knutsford did great work to improve the status, education, and training of nurses; and during the 1914–18 war the three heads of the Army nursing services, at the War Office, in France, and in the Mediterranean, were all from The London. The story of development had continued; and, though the present age was troubled by many anxieties, we should remember that fear is a bad counsellor. William Bulloch used to quote a Greek saying that "the Gods give all things to all men at the price of Labour"—a saying perhaps applicable today to certain aspects of our country's economy.

Dr. H. B. May, dean of the medical college, described the year's activities, and Mr. Victor Lack proposed The Chairman. The affection in which Sir Alun is held was, he said, evident from everybody calling him (though he never married) Daddy Rowlands; and in his 31 years on the active staff many had learnt much from his great patience and persistence in seeking out the diagnosis and his great kindness to his patients and his staff in the true tradition of The London.

Dental Health Review

On Oct. 18 a meeting was held at the Ministry of Health comprising representatives of various bodies concerned with dental health and recruitment to the dental profession. A preliminary exchange of views took place and what is being done and can be done is now to be further studied.

Library Association

Medical Section.—On Wednesday, Oct. 30, at 6.30 P.M., at Chaucer House, Malet Place, London, W.C.1, a discussion will be held on How far should the Public Library provide Medical Literature ? The opening speakers will be Mr. W. R. Maidment, Dr. J. G. Thwaites, and Mr. W. J. Bishop. The meeting will be open to doctors.

International Standard for Stretchers

The committee of the International Organisation for Standardisation has accepted the United Kingdom view that the longitudinal centre distance between the stretcher runners (that slide into channels provided in ambulances) should be five feet. This figure has been submitted for approval as an I.S.O. recommendation. If this is agreed, it will be possible for the sick and injured to cross frontiers without being moved from one stretcher to another.

National Varicose Foundation

This Foundation is planning a series of one-day symposia on varicose and postphlebitic disorders. Physicians, surgeons, physiologists, and research-workers who may wish to attend and contribute to the discussion are asked to write to Dr. Stanley Rivlin, chairman of the Foundation, at the London Varicose Clinic, 14, York Road, London, S.W.11.

The following have become members of the Foundation's medical advisory panel :

Dr. J. A. Fraser Roberts (genetics), Mr. E. Robert Rees (obstetrics and gynæcology), Dr. A. N. Exton-Smith (geriatrics), Mr. Stanley Aylett (general surgery), Dr. John Dow (radiology), and Dr. Kennedy Harper (anæsthetics).

Appointments

DEAN, Helen M., M.B. St. And., D.P.H. : senior assistant M.O. and school M.O., Barnoldswick, Earby, Silsden, and Skipton.
DUMMER, F. H. M., M.B. St. And., D.P.H. : M.O.H., Maidstone, Hollingbourn, and Malling.
O'NEILL, M. E., M.B., D.P.H. : senior assistant M.O., Maltby, Rotherham, Kiveton Park and West Riding of Yorkshire.
PARRY-JONES, Mary, M.R.C.S., D.P.H. : assistant M.O., Newport, Monmouthshire.
SMITH, J. L. S., M.D. Cantab., D.O.M.S. : consultant pathologist, St. Paul's Eye Hospital, Liverpool.
WILDMAN, J. H., M.R.C.S., D.P.H. : M.O.H., Dartmouth, Brixham, and Paignton.

The Hospital for Sick Children, Great Ormond Street, London:
BIRNSTINGL, M. A., M.B. Lond., F.R.C.S. : surgical outpatient assistant.
GOLDBLATT, Elton, M.B., B.SC. W'srand, D.C.H. : assistant medical registrar.
HELLINGS, Pamela M., M.B. Brist., F.F.A.R.C.S., D.A. : senior registrar in anæsthetics.
RIDGE, Priscilla A., M.B. Lond. : house-surgeon to the orthopædic and plastic departments.
SATHASIVAM, R., M.B., M.R.C.P., D.C.H. : house-physician.
WELLS, B. G., M.B. Lond., M.R.C.P. : part-time M.O. to the cardiothoracic unit.
WILLIAMS, R. G., M.B. Lond., F.R.C.S., D.L.O. : senior registrar to the ear, nose and throat department.

East Anglian Regional Hospital Board:
AGATE, J. N., M.D. Cantab., M.R.C.P. : consultant physician in geriatrics, Ipswich and East Suffolk hospital group.
MILSTEIN, B. B., M.B. Lond., F.R.C.S. : consultant thoracic surgeon, Papworth Hospital.

Newcastle Regional Hospital Board:
CLARKE, P. R. R., M.B. Lond., F.R.C.S. : consultant neurosurgeon, Tees-side and Newcastle groups of hospitals.
GRAHAM, G. S., M.B. Durh. : assistant pathologist (S.H.M.O.), Durham and Gateshead groups of hospitals.
JUBY, H. B., M.B. Lond., F.R.C.S., D.L.O. : consultant E.N.T. surgeon, North West Durham and Durham groups of hospitals.
MANNERS, A. R., M.B. Edin., D.M.R.D. : assistant radiologist (S.H.M.O.), Tees-side, Cleveland, Darlington, Northallerton, and Sedgefield groups of hospitals.

Colonial Appointments:
DAVIS, B. R., M.B., D.C.P. : pathologist, pneumoconiosis medical and research bureau, Northern Rhodesia.
FLETCHER, G. H., M.B. L'pool, T.D.D. : M.O. in charge, sub-bureau of the pneumoconiosis medical and research bureau, Northern Rhodesia.
FORDE, H. McD., M.D. Lond., M.R.C.P.E., D.P.H., D.T.M. & H. : specialist physician, General Hospital, Barbados.
FUNG, O. C., M.B. Lond., F.R.C.S. : M.O. (grade A), Port of Spain General Hospital, Trinidad.
OTOLORIN, M. P., M.R.C.S. : senior M.O. (administration), Adeoyo Hospital, Western Nigeria.

Charing Cross Hospital Medical School

This school's new department of anæsthesia, of which Dr. H. K. Ashworth is head, was opened by Sir Robert Macintosh on Oct. 8.

Diary of the Week

Monday, 28th

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.C.1
5.30 P.M. *Odontology.* Mr. G. T. Hankey : Some Observations on Costen's Mandibular Syndrome. (Presidential address.)
POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
4 P.M. Dr. Aubrey Leatham : The Art of Auscultation.
MANCHESTER MEDICAL SOCIETY
5 P.M. *Odontology.* (Dental Hospital.) Mr. F. Taylor Monks : Conservative Surgery in the Treatment of Adamantinomas. (Presidential address.)
9 P.M. *General Practice.* (Medical School.) Dr. R. W. Fairbrother : Recent Developments in the Antibiotic Field.

Tuesday, 29th

BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1.) Dr. J. P. Shillingford : The Study of the Circulation by Dye Dilution Curves.
POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P.M. Sir Robert Macintosh : Anæsthetics Behind the Iron Curtain.
ST. MARY'S HOSPITAL MEDICAL SCHOOL, London, W.2
5 P.M. Mr. W. J. H. M. Beattie : The Acute Abdomen and the Gynæcologist.
INSTITUTE OF DERMATOLOGY, Lisle Street, W.C.2
5.30 P.M. Dr. N. R. Mackay : Radiation Physics. (Second of two lectures.)
ROYAL ARMY MEDICAL COLLEGE, Millbank, S.W.1
5 P.M. Dr. J. D. Wyndham Pearce : Depressive States.

Wednesday, 30th

POSTGRADUATE MEDICAL SCHOOL OF LONDON
2 P.M. Dr. J. D. N. Nabarro : Diabetes and Carbohydrate Metabolism. (Second of two lectures.)
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. R. W. Riddell : Diagnosis of Fungous Infection.
INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3
5 P.M. Prof. John Crofton : Methods of Clinical Research in Chest Disease.
RENAL ASSOCIATION
4.30 P.M. (41, Portland Place, W.1.) Dr. Hugh de Wardener : Certain Mechanisms Concerned in Concentration of the Urine. Dr. M. D. Milne : Primary Aldosteronism. Dr. T. M. Chalmers ; Dr. Vulk Eisen : Renal Effects of Potassium Depletion in Patients and in Rats.
BRITISH ASSOCIATION OF SPORT AND MEDICINE
5.30 P.M. (University College Hospital Medical School, University Street, W.C.1.) Dr. I. J. MacQueen : Influence of Somatotype on Selection and Training for Sport and Athletics.
ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, W.1
3.30 P.M. Prof. T. H. Davey : Domestic Animals and Human Disease.
NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY, 64, St. James's Street, Nottingham
8.30 P.M. Dr. Macdonald Critchley : The Monster of Düsseldorf.

Thursday, 31st

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
5 P.M. Prof. J. S. Barr : Arthroplasty of the Hip—Some Practical and Theoretical Considerations. (Robert Jones lecture.)
UNIVERSITY OF LONDON
5 P.M. (1, Wimpole Street, W.1.) Mr. F. C. W. Capps : Abductor Paralysis : Theory and Practice since Semon. (Semon lecture.)
BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene and Tropical Medicine.) Dr. Rosemary Biggs : Haemophilia and Christmas Disease.
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. G. C. Wells : Pigmentation.
INSTITUTE OF PSYCHIATRY
3 P.M. (Maudsley Hospital, Denmark Hill, S.E.5.) Dr. W. H. Thorpe : Drive and Instinct in Animals. (Third of three lectures.)
UNIVERSITY OF ST. ANDREW'S
5 P.M. (Queen's College, Dundee.) Prof. C. E. Dent : The Clinical Importance of Amino-acid Metabolism.

Friday, 1st

ROYAL SOCIETY OF MEDICINE
10.30 A.M. *Otology.* Dr. I. Simson Hall : Otosclerosis, a Twenty-Year Retrospect. (Presidential address.)
2.30 P.M. *Laryngology.* Mr. R. J. Cann : Laryngology—a Retrospect, a Review, and a Revaluation. (Presidential address.)
5.30 P.M. *Anaesthetics.* Dr. B. L. S. Murtagh : The Anaesthetists' Environment. (Presidential address.)
POSTGRADUATE MEDICAL SCHOOL OF LONDON
10 A.M. Prof. Henry Barcroft : Sympathetic Control of Limb Blood Vessels.
ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW
8.30 P.M. (Royal Faculty of Physicians and Surgeons of Glasgow.) Mr. J. F. R. Bentley : Surgical Help for Infants with Respiratory Symptoms. Mr. N. J. Blockey : Recent Advances in Paediatric Orthopaedics. Mr. J. L. Morton : Vomiting in the Newborn.
PLYMOUTH MEDICAL SOCIETY
8-30 P.M. (Freedom Fields.) Dr. Alice Stewart : Recent Developments in Social Medicine.

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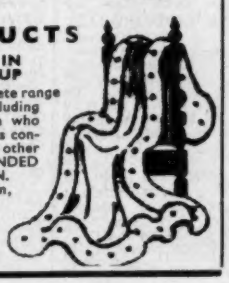

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Academic and Educational

ROYAL COLLEGE OF PHYSICIANS OF LONDON

AUBREY JULIAN LEWIS, ESQ., M.D., F.R.C.P., will deliver the Bradshaw Lecture on THURSDAY, 7TH NOVEMBER, 1957, at 5 P.M. at the College, Pall Mall East, S.W.1.

Subject: "Between Guesswork and Certainty in Psychiatry."

Any member of the Medical Profession admitted on presentation of card.

By order of the President.

HAROLD BOLDERO, Registrar.

BRITISH POSTGRADUATE MEDICAL FEDERATION
(UNIVERSITY OF LONDON)
INSTITUTE OF ORTHOPÆDICS

COURSE ON DISORDERS OF JOINTS
14TH–16TH NOVEMBER, 1957

Thursday, 14th November, 1957—Town Section (234 Great Portland-street, W.1)
10.00–11.00..Manipulation ..Mr. H. JACKSON BURROWS
11.30–12.45..Rheumatoid Arthritis ..Dr. R. NASSIM
2.00–3.15..Radiology of Joint Disease ..Dr. R. O. MURRAY
Friday, 15th November, 1957—Town Section
10.00–11.00..Contractures ..Mr. J. I. P. JAMES
11.30–12.45..Clinical Demonstration ..Mr. A. T. FRIPP
2.00–3.00..Bacteriology in Joint Disease ..Dr. C. H. LACK
3.00–4.00..Ankylosing Spondylitis ..Prof. B. W. WINDEYER
Saturday, 16th November, 1957—Country Section (Brockley Hill, Stanmore, Middlesex)
9.30–11.00..General Ward Round ..Mr. K. I. NISSEN
11.30–12.30..Arthrodesis and Arthroplasty ..Mr. D. TREVOR
2.00–3.30..Joint Tuberculosis ..Mr. J. A. CHOLMELEY
4.00–5.00..Joint Tuberculosis ..Dr. F. H. STEVENSON

The fee for this course (including coffee, lunch and tea) is 3 guineas.

Early application should be made to the Dean, at 234, Great Portland-street, London, W.1.

NAPT SYMPOSIUM MEETINGS

LUNG CARCINOMA. Chairman: N. LLOYD RUSBY, M.A., D.M., F.R.C.P. FRIDAY, 22ND NOVEMBER.

CARDIAC PROBLEMS FOR GENERAL PHYSICIANS. Chairman: K. SHIRLEY SMITH, B.SC., M.D., F.R.C.P. FRIDAY, 6TH DECEMBER.

Both meetings 3.30–6.30 P.M. in Great Hall, B.M.A. House, W.C.1. Tickets, including afternoon tea and sherry, 10s. each.

Details from NAPT, Tavistock House North, W.C.1.

SOCIETY OF APOTHECARIES OF LONDON

DIPLOMA IN INDUSTRIAL HEALTH

The next Examination will begin on MONDAY, 9TH DECEMBER, 1957. The following Examination will be held in July, 1958.

For Regulations apply Registrar, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

THE INSTITUTE OF LARYNGOLOGY AND OTOLOGY
(UNIVERSITY OF LONDON)
330/332, Gray's Inn-road, London, W.C.1.

PRACTICAL REVISION CLASS for Part II D.L.O. students, 27TH NOVEMBER to 10TH DECEMBER, 1957.

Short course on THE DEAF CHILD for Medical Officers of Health and Senior Medical Officers, 13TH, 14TH and 15TH NOVEMBER, 1957.

Syllabus obtainable from the Dean.

GUY'S HOSPITAL MEDICAL SCHOOL, London, S.E.1. Applications are invited for the post of LECTURER IN PHARMACOLOGY with duties commencing as soon as possible, and at an initial salary of £1100–£100–£1600–£50 to £1650 p.a., plus £60 London allowance, with family allowance and superannuation.

Forms of application are obtainable from, and should be lodged with, the Dean, Guy's Hospital Medical School, London Bridge, S.E.1, not later than 7th November, 1957.

UNIVERSITY OF LONDON. The Senate invite applications for the CHAIR OF PATHOLOGY tenable at St. Thomas's Hospital Medical School (salary within the range £2500 to £3000 a year).

Applications (10 copies) must be received not later than 18th November, 1957, by the Academic Registrar, University of London, Senate House, W.C.1, from whom further particulars may be obtained.

UNIVERSITY OF LONDON. POSTGRADUATE MEDICAL SCHOOL. Applications invited for the post of Whole-time LECTURER IN ANÆSTHETICS (Consultant status). Appointment for 5 years in the first instance. Duties include postgraduate teaching and research. Previous experience in research methods an advantage. Salary scale £2050–£100–£2550, F.S.S.U. and children's allowance.

Applications (7 copies) by 9th November to the Dean, Postgraduate Medical School, Ducane-road, W.12.

THE LONDON HOSPITAL MEDICAL COLLEGE. Applications are invited for the appointment of LECTURER IN SURGERY. The appointment combines active clinical surgery on the Surgical Unit with surgical research in the new Department of Experimental Surgery which has full animal facilities. Initial salary according to age and qualifications within the range of £1150–£1750 p.a., together with superannuation under the F.S.S.U. or N.H.S. and Family Allowances at the rate of £50 p.a. per child.

Candidates, who should be in possession of a surgical fellowship, should forward their applications (3 copies) within 14 days, to the Secretary, The London Hospital Medical College, Turner-street, E.1.

THE UNIVERSITY OF LIVERPOOL. Applications are invited for the post of Whole-time LECTURER in the Department of Child Health. The initial salary will be within the range £1200–£1500 p.a., according to qualifications and experience. The successful candidate will be granted an honorary contract as consultant in respect of 2 sessions at Mill Road Maternity Hospital. Experience in pædiatric cardiology is essential.

Applications, stating age, academic qualifications and experience, together with the names of 3 referees, should be received not later than 9th November, 1957, by the Registrar, from whom further particulars of the conditions of appointment may be obtained.

THE UNIVERSITY OF LIVERPOOL. Applications are invited for the post of Whole-time READER in the Department of Medicine (Professor: The Rt. Hon. Lord Cohen of Birkenhead), duties to commence on 1st January, 1958. The salary will be within the range £1900–£2900 p.a., according to qualifications and experience. The successful candidate will be granted an honorary contract under the Board of Governors of the United Liverpool Hospitals as Consultant Physician of junior status at the Royal Infirmary.

Applications, stating age, academic qualifications and experience, together with the names of 3 referees, should be received not later than 9th November, 1957, by the Registrar, from whom further particulars of the conditions of appointment may be obtained.

THE UNIVERSITY OF MANCHESTER. Applications are invited from persons with medical qualifications registrable in this country for the full-time post of LECTURER or ASSISTANT LECTURER IN OPHTHALMIC PATHOLOGY in the Departments of Ophthalmology and Pathology. Whilst previous experience in the subject is desirable, candidates with some experience in general pathology would also be considered. The successful candidate would be required to commence his duties on 1st January, 1958, if possible. Salary p.a.: Lecturer, on a scale rising to £2150; Assistant Lecturer, on a scale £900–£1300. Initial salary and status according to qualifications and experience. Membership of the F.S.S.U. and children's allowance scheme.

Applications should be submitted not later than 20th November, 1957, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained.

UNIVERSITY OF EDINBURGH. Department of Public HEALTH AND SOCIAL MEDICINE. Applications are invited from graduates in medicine, for the post of ASSISTANT in the Department of Public Health and Social Medicine. Salary scale £700–£50–£850 p.a., with superannuation benefit and family allowance where applicable. Among the duties of the successful applicant will be participation in research. There will also be facilities to enable the successful applicant to proceed to higher qualifications.

Further particulars may be obtained from the undersigned, with whom applications, together with the names of 2 referees, should be lodged not later than 9th November, 1957.

CHARLES H. STEWART, Secretary to the University.

October, 1957.

AUSTRALIAN NATIONAL UNIVERSITY, Canberra. JOHN CURTIN SCHOOL OF MEDICAL RESEARCH. The Electoral Committee for the CHAIR OF EXPERIMENTAL PATHOLOGY wishes it known that it will shortly consider nominations in order to make a recommendation for appointment to the Chair and invites interested and qualified scientists to inform the undersigned, from whom a statement * of further particulars may be obtained, before 30th November, 1957.

The Department of Experimental Pathology is a research department and the salary of the Professor will be £A3550 p.a. Reasonable travel and removal expenses are payable. One year's study leave with travel allowance will be granted after each 3 years' service.

Notwithstanding this notification the University retains the right to fill the Chair by invitation.

R. A. HOHNEN, Registrar.

Box 4, G.P.O., Canberra, A.C.T., Australia.

* This statement may also be obtained from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1.

Hospital Services: Senior Appointments

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

1. CONSULTANT OBSTETRICIAN AND GYNÆCOLOGIST, 4 half-days a week—2 half-days at King Edward Memorial Hospital, Ealing, W.13 (145 Beds), and 2 half-days at Perivale Maternity Hospital, Western-avenue, Greenford, Middlesex (51 Beds).

Applications before 18th November, 1957.

2. CONSULTANT SURGEON, whole-time or maximum sessions, Barnet General Hospital, Wellhouse-lane, Barnet (461 Beds). Successful candidate required to live within easy reach of the Hospital.

Applications before 21st November, 1957.

3. CONSULTANT RADIOLOGIST, 2 half-days a week, Hornsey Central Hospital, Park-road, N.8. (General Practitioner Hospital—60 Beds.)

Applications before 25th November, 1957.

4. CONSULTANT OPHTHALMOLOGIST, 1 half-day a week (Tuesday afternoons), Royal London Homœopathic Hospital, Great Ormond-street, W.C.1. (183 Beds.)

Applications before 27th November, 1957.

5. CONSULTANT GERIATRICIAN, whole-time, West Herts Group of Hospitals. Duties mainly at Shrodells Hospital, Watford (386 Beds) and St. Paul's Hospital, Hemel Hempstead (221 Beds).

Applications before 29th November, 1957.

Hospitals may be visited by direct appointment.

Application forms obtainable from and returnable to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Walsall group of hospitals. Whole-time ASSISTANT PATHOLOGIST. Salary £1653 15s.–£2126 5s. p.a. Duties mainly at Walsall General (Sister Dora) and St. Margaret's Hospitals. Wide experience specialty and higher qualification required.

Applications (15 copies), stating name, age, qualifications, present and previous appointments, and details of 3 referees, to Secretary, Regional Hospital Board, 10, Augustus-road, Birmingham, 15, by 25th November, 1957.

LEEDS REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer scale) for duties at Clifton Hospital, York (1112 Beds), and associated clinics at Harrogate, York and Scarborough. The person appointed may also have duties at Claypenny Hospital for Mental Defectives (1 session per week). Detached 4-bedroomed house available.

Applications (12 copies), stating age, qualifications and details of present and previous appointments with dates, and names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 18th November, 1957.

LEEDS REGIONAL HOSPITAL BOARD. Whole-time or maximum part-time CONSULTANT in Geriatrics for duties at hospitals in the Bradford A and B Groups. The successful applicant will be responsible for the clinical control of geriatric services in the 2 groups (740 Beds), and will be expected to maintain the present close liaison with general practitioners and the local authority. The appointee will be required to reside in or near Bradford.

Applications (12 copies), stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to The Secretary, Park-parade, Harrogate by 18th November, 1957.

MANCHESTER REGIONAL HOSPITAL BOARD. Whole-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer), Prestwich (Mental) Hospital, Manchester (about 3000 Beds). Single person can be accommodated in hospital, otherwise post non-resident. All modern forms of treatment are undertaken. Candidates should have had wide experience in psychiatry; D.P.M. desirable.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by 11th November, 1957.

NEWCASTLE REGIONAL HOSPITAL BOARD. Main hospitals—Newcastle General (850 Beds); Hunters Moor (110 Beds); Ponteland (74 Beds). (Total geriatric beds 354.) PHYSICIAN required primarily for the geriatric unit in the Newcastle group of hospitals; whole-time or maximum part-time. Senior Hospital Medical Officer status. Appointee will be a member of a team of 4 specialists.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, within 28 days.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum Part-time CONSULTANT E.N.T. SURGEON required with duties mainly at the Chesterfield Royal Hospital.

Application form and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 23rd November, 1957.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT SENIOR CASUALTY OFFICER required at the Rotherham Hospital, Doncaster Gate, Rotherham. Salary scale £1653 15s.–£52 10s.–£2126 5s. p.a. Tenure for a period not exceeding 4 years.

Application form and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 23rd November, 1957.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum part-time CONSULTANT NEUROSURGEON required with main duties at the Derby Group of Hospitals.

Application forms and further details from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 16th November, 1957.

U.S.A., Brooklyn, New York. Anesthesiologists. 2 openings on the Professional Staff of a 400-Bed Hospital, 20 minutes from Times Square. Active anesthesia experience in wide variety anesthesia techniques, including cardio-pulmonary. New operating room, air-conditioned suite. This Hospital affiliated with New York State University Medical School.

Applications, stating age, nationality, qualifications and previous experience. 2 references requested. Send applications to Director of Anesthesiology, Address No. 334, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

U.S.A. NORTH CAROLINA SANATORIUM, McCain, NORTH CAROLINA, U.S.A. Required, PHYSICIANS for full-time employment in 600-Bed Chest Disease Hospital. Salary: Physician I, $7884–$9396; Physician II, $9360–$11,040. Attractive living accommodations for family and single persons at reasonable cost. Hospital affiliated in residency training programmes in medicine and surgery. Located in Central North Carolina, within easy driving range of mountain and seashore resort areas. Year round mild climate. Liberal vacation and sick leave. Retirement and insurance programmes available. Must speak English. Appointments available for 1st January and 1st July, 1958.

Write: Assistant Medical Director.

Hospital Services: Junior Appointments

CONNAUGHT HOSPITAL, Walthamstow, E.17. (123 Beds). 2 HOUSE SURGEONS required for 6 months. Recognised for F.R.C.S.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

CHARING CROSS HOSPITAL, W.C.2. Senior House OFFICER in PATHOLOGY. Tenable for 1 year in the first instance from 1st January, 1958, with eligibility for promotion to Registrar grade for 1 further year. During this 2-year period approximately 1 year will be spent in residence in the Hospital.

Application forms obtainable from the undersigned to be returned by 16th November, 1957.

FRANK HART, Secretary to the Board.

CHARING CROSS HOSPITAL, W.C.2. Applications are invited for the following preregistration appointments, tenable for 6 months from 1st January, 1958:—

(*a*) **Charing Cross Hospital**
RESIDENT ANÆSTHETIST (post-registration).
HOUSE PHYSICIAN to the Radiological Department.

(*b*) **Mount Vernon Hospital**
HOUSE SURGEON to the Gynæcological Department.

(*c*) **Harrow Hospital**
1 HOUSE PHYSICIAN.
2 HOUSE SURGEONS.

(*d*) **Wembley Hospital**
1 HOUSE PHYSICIAN.
3 HOUSE SURGEONS.

Application forms to be returned to the undersigned by 18th November, 1957.

FRANK HART, Secretary to the Board.

CHARING CROSS HOSPITAL GROUP. WEMBLEY HOSPITAL. CASUALTY OFFICER (Junior Hospital Medical Officer grading). Tenable from 1st January, 1958, for 1 year in the first instance.

Applications on forms obtainable from the undersigned to be returned by 18th November, 1957.

FRANK HART, Secretary to the Board.

Charing Cross Hospital, W.C.2.

DULWICH HOSPITAL, East Dulwich Grove, S.E.22. Applications invited for appointment as SENIOR HOUSE OFFICER (obstetrics and gynæcology). Recognised for M.R.C.O.G. (obstetrics only). There is an association with Kings College Hospital Medical School for undergraduate teaching purposes.

Applications, giving age, qualifications and experience, with names of 2 referees or copy of testimonials, to Group Secretary, Dulwich Hospital, not later than 7th November, 1957.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. ROYAL FREE HOSPITAL GROUP. Applications are invited from registered Women medical practitioners for the post of Full-time SURGICAL REGISTRAR (non-resident). Recognised for the F.R.C.S. examination. Appointment for 1 year in the first instance, to commence 1st January, 1958. Salary in accordance with Ministry of Health scale for Registrars.

Applications, with names of 3 referees, should be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 4th November, 1957.

FULHAM HOSPITAL, St. Dunstan's-road, Hammersmith, W.6 (414 Beds). Recognised for the D.A. SENIOR HOUSE OFFICER (Resident) in Anæsthetics. The post offers experience in anæsthetics for all types of general surgery, including an Obstetrics Unit of 30 Beds. Staff includes a full-time Registrar.

Applications, on forms obtainable from Hospital Secretary (L97), as soon as possible.

GROVE PARK HOSPITAL, Lee, London, S.E.12. Lewisham GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER to the Thoracic Surgery Unit at the above Hospital. Vacant immediately. Salary £819 10s. p.a., less £150 for residential emoluments.

Applications, stating age, qualifications and experience, with copy testimonials or names of referees, to the Group Secretary at Lewisham Hospital, London, S.E.13.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications for the 6 months Resident House Officer appointments of:—

(*a*) CASUALTY OFFICER AND HOUSE SURGEON (E.N.T.), now vacant.

(*b*) CASUALTY OFFICER AND HOUSE PHYSICIAN (Skin Department), now vacant.

Applications should be sent immediately to Secretary, above address, quoting C.O. (*a*) or (*b*).

HAMPSTEAD GENERAL HOSPITAL, Haverstock-hill, N.W.3. ROYAL FREE HOSPITAL GROUP. Applications are invited from registered medical practitioners for the post of RESIDENT CASUALTY OFFICER (graded as Senior House Officer). Salary £745 p.a. Tenable for a period of 6 months from the 1st December, 1957, at the main Outpatient Department, Bayham-street, N.W.1.

Application forms may be obtained from the Secretary, to whom they should be returned, together with copies of 3 recent testimonials, by 1st November, 1957.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, London, N.W.8. Required to commence on Monday, 2nd December, Full-time SURGICAL REGISTRAR (Male). The possession of the Diploma of one of the Royal Colleges is desirable. Honorarium at the rate of £850 p.a. Appointment will be for a period of 12 months.

Further particulars may be obtained from the Secretary to whom applications, with names of 3 referees, should be sent on or before Tuesday, 5th November.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, London, N.W.8. Applications are invited from preregistration or registered medical practitioners (Male) for the appointment of HOUSE SURGEON to the Midwifery and Gynæcological Departments, to become vacant on 4th December, 1957. Appointment will be for a period of 6 months. National Health Service salary.

Applications to reach the Secretary on or before 4th November, 1957, together with copies of 3 recent testimonials.

FOREST GATE HOSPITAL, Forest-lane, E.7. Pre-registration OBSTETRIC HOUSE OFFICER (second post) required for 6 months commencing 1st December, 1957. The appointment is recognised for training candidates for M.R.C.O.G. and D.Obst.R.C.O.G.

Applications, with names of 2 referees, to Hospital Secretary by 2nd November, 1957.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. Whole-time NON-RESIDENT SENIOR HOUSE OFFICER (general medicine) required as soon as possible.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, The Board of Governors, Hammersmith, West London and St. Mark's Hospitals, Ducane-road, W.12, by 4th November.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. Whole-time NON-RESIDENT REGISTRAR (general medicine) required as soon as possible.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, The Board of Governors, The Hammersmith, West London and St. Mark's Hospitals, Ducane-road, W.12, by 4th November.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. Whole-time NON-RESIDENT REGISTRAR required 16th December, in the Hammersmith Chest Clinic, Hammersmith Hospital. Previous experience of Chest Clinic and/or Sanatorium or Chest Hospital practice desirable.

Applications, stating age, qualifications, experience and names of 2 referees, to Secretary, Board of Governors, by 4th November.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL OF LONDON AND THE UNIVERSITY COLLEGE HOSPITAL OF THE WEST INDIES. Joint Appointment. Whole-time REGISTRAR (Anæsthetics) required as soon as possible. Post tenable for 2 years, the first 3 months at Hammersmith Hospital (non-resident), the next 12 months at the University College Hospital of the West Indies (flat available), returning to Hammersmith Hospital for the final 9 months. Return passage paid to West Indies for one person only.

Salary: Whilst at Hammersmith Hospital, £935 or £1061 10s. Whilst at University College Hospital of the West Indies, £1200 minimum.

Detailed applications, stating age, qualifications, experience, names of 2 referees, should reach the Secretary, The Board of Governors, The Hammersmith, West London and St. Mark's Hospitals, Ducane-road, London, W.12 (from whom further details concerning this appointment can be obtained) by 4th November, 1957.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. Applications are invited from registered medical practitioners for the following posts :—

2 RESIDENT HOUSE SURGEONS (Radiotherapy), both posts vacant 1st January. These 2 posts offer opportunities for attending general surgical postgraduate teaching.

RESIDENT HOUSE PHYSICIAN 1st January for duties in Tuberculosis wards and Hammersmith Chest Clinic, dealing with all types of respiratory diseases.

RESIDENT HOUSE SURGEON (orthopædic) 7th January.

6 RESIDENT HOUSE PHYSICIANS (general medicine) required, 3 1st January, 3 1st February.

Applications, stating age, qualifications, experience, copies 2 recent testimonials, to Secretary, Board of Governors, by 9th November, 1957.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12. RESIDENT HOUSE PHYSICIAN (pædiatrics) required 1st January. Post recognised for D.C.H.

Applications, on forms obtainable from the Secretary, Board of Governors, The Hammersmith, West London and St. Mark's Hospitals, Ducane-road, London, W.12, to be returned by 12th November.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Applications are invited from pre-registration and registered medical practitioners for the post of RESIDENT HOUSE SURGEON. Vacant 5th December, 1957. The successful candidate will be required to carry out a fortnight's locum duty from 21st November, 1957.

Application forms from the Secretary.

MEMORIAL HOSPITAL, Shooters-hill, S.E.18. SENIOR HOUSE OFFICER (Anæsthetics). Vacant shortly. The post provides good experience and is recognised for F.F.A.R.C.S. and D.A. 6 months resident appointment and may then be renewed.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of SENIOR REGISTRAR in the Department of X-ray Diagnosis now vacant. A second vacancy will probably be advertised shortly.

Rules and application forms obtainable from Deputy Superintendent should be returned, naming 2 referees, by 6th November.

MILE END HOSPITAL, Bancroft-road, London, E.1. (484 Beds.) HOUSE PHYSICIAN (pre- or post-registration), post vacant 19th November, 1957.

Application forms, obtainable from Physician-Superintendent, to be returned by 1st November, 1957, with copies of not more than 3 testimonials.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. HOUSE SURGEON (pre- or post-registration), resident, required for 1st December for 6 months. Duties mainly general surgery, with some E.N.T. surgery. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital, by 30th October.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. RESIDENT HOUSE SURGEON (general, orthopædic and traumatic surgery), pre- or post-registration, required for 6 months. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials, to Secretary of Hospital.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. SENIOR HOUSE OFFICER for Thoracic Surgical Unit, resident, required. 6 months' appointment in the first instance, from 17th December (locum 2nd–16th December). The post, which is recognised for F.R.C.S., offers experience in all types of tuberculous and non-tuberculous thoracic surgery.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials and/or names of 2 referees, to Secretary of Hospital, by 6th November.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

SURGICAL REGISTRAR (resident or non-resident, sleeping in on duty nights). Oldchurch Hospital, Romford, Essex. 60 of the 200 acute surgical beds in the unit are allocated to this section. Recognised for the F.R.C.S.

SURGICAL REGISTRAR (resident). General Hospital, Southend-on-Sea, Essex. Vacant 1st December, 1957. Applicants should hold F.R.C.S.

PSYCHIATRIC REGISTRAR (resident or non-resident). Warley Hospital, Brentwood, Essex. (Flat available for married candidate.) Recognised for D.P.M.

PÆDIATRIC REGISTRAR (non-resident). Queen Elizabeth Hospital for Children, Hackney-road, E.2. Experience in diseases of children essential.

ANÆSTHETIC REGISTRAR (resident). Chelmsford and Essex and St. John's Hospitals, Chelmsford, Essex, with duties also at Broomfield Hospital, Chelmsford, for Thoracic Surgery. Post recognised for D.A. and F.F.A.R.C.S. Vacant 1st January, 1958.

ANÆSTHETIC REGISTRAR (non-resident, sleeping in on duty nights). Whipps Cross Hospital, Leytonstone, E.11. Recognised for D.A.

Appointments subject to review after 1 year.

Application forms from Secretary, North East Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, to be returned by 9th November, 1957.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. OPHTHALMIC REGISTRAR (whole-time and non-resident) required for Group Ophthalmic Centre of 26 Beds, now being constructed at Neasden Hospital, Brentfield-road, N.W.10. Possibility of attending outpatient clinics in Group hospitals. Selected candidate must be prepared to live within reasonable access to the Hospital. Appointment to commence approximately 1st February, 1958. Hospital may be visited by direct appointment.

Application forms obtainable from and returnable to Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 13th November, 1957.

PADDINGTON GENERAL HOSPITAL, Harrow-road, W.9. ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. Applications are invited for the post of RESIDENT PATHOLOGIST (Senior House Officer) (1 of 2). Appointment will be for 1 year, part to be spent at each Hospital. Further details obtainable from Director, Paddington General Hospital and Group Laboratory.

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, to be sent to Secretary to Committee, Paddington Group Hospital Management Committee, Harrow-road, W.9, by 4th November.

PADDINGTON GREEN CHILDREN'S HOSPITAL, W.2. (St. Mary's Hospital.) Applications are invited for the posts of :—

(*a*) HOUSE PHYSICIAN.
(*b*) HOUSE SURGEON.

Pre-registration posts, vacant 1st December, 1957. Tenable for 6 months.

Applications, stating age, nationality, qualifications with dates, and experience, with copies of 3 recent testimonials, should reach the Secretary not later than Saturday, 2nd November, 1957.

ST. NICHOLAS HOSPITAL, Plumstead, S.E.18. SENIOR HOUSE OFFICER (Casualty Department). Vacant 27th November. Recognised for F.R.C.S. 6 months resident appointment and may then be renewed for a further period.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. House PHYSICIAN for duty in Rheumatism Unit. Resident. This post offers valuable experience in general medicine and specialised experience in rheumatic and connective tissue diseases and is very suitable for candidates wishing to take membership. Vacancy early December.

Applications, naming 2 referees, to Medical Superintendent within 14 days.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. House PHYSICIAN (pre-registration) general medicine and some tuberculosis. Resident. Vacancy 16th December, 1957.

Applications, naming 2 referees, to Medical Superintendent within 14 days.

ST. MARY'S HOSPITAL, Paddington, W.2. Resident HOUSE PHYSICIAN to the Neurological, Dermatological and Venereological Departments required, for which either pre-registration interns seeking their second House Officer appointment, or post-registration candidates are eligible to apply. The appointment is for a period of 6 months with effect from 1st December, 1957.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, by 29th October, 1957.

ST. MARY'S HOSPITAL, Paddington, W.2. Registrar (whole-time, non-resident) in General Medicine required to undertake work in the Casualty and Outpatient Departments, as well as having certain inpatient duties. The appointment will be for a first period of 12 months, as from 1st January, 1958.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 5th November, 1957.

ST. MARY'S HOSPITAL, Paddington, W.2. Clinical PATHOLOGIST required for a period of 8 months, with effect from 1st December, 1957. Remuneration at "Senior House Officer" rates. (First 2 months non-resident, remaining six months resident.) Applicants should have held 2 House Officer appointments at this Hospital or another Hospital approved by the Board of Governors and preference will be given to those intending to specialise in pathology.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 5th November, 1957.

ST. GILES' HOSPITAL, Camberwell, S.E.5. House SURGEON (casualty duties, with some general surgical, E.N.T. and eye beds). Recognised pre-registration post.

Applications, with copy testimonials or names of referees, to Group Secretary, Camberwell Hospital Management Committee, Dulwich Hospital, East Dulwich-grove, S.E.22.

ST. GILES' HOSPITAL, CAMBERWELL, S.E.5. Applications invited for appointment as SENIOR HOUSE OFFICER (general medical duties). Resident post.

Apply, giving age and details of qualifications and experience, with copy of testimonials or names of 2 referees, to Group Secretary, Camberwell Hospital Management Committee, Dulwich Hospital, East Dulwich-grove, S.E.22, not later than 6th November, 1957.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Anæsthetics to fill a vacancy in the approved trainee establishment at the Greenwich and Deptford group of hospitals for duties at the Miller General Hospital, Greenwich High-road, S.E.10, and St. Alfege's Hospital, Vanbrugh-hill, S.E.10. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staff (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience, with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 9th November, 1957.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Anæsthetics to fill a vacancy in the approved trainee establishment at the Bermondsey and Southwark group of hospitals for duties mainly at St. Olaves Hospital, Lower-road, S.E.16. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staff (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience, with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 9th November, 1957.

ROYAL MARSDEN HOSPITAL, Fulham-road, London, S.W.3. Applications are invited from registered medical practitioners for 2 posts of HOUSE SURGEON (resident). Salary £577 10s. p.a. Posts are tenable for 6 months from 13th and 31st December respectively.

Forms of application are obtainable from the House Governor, to whom applications, together with copies of 3 recent testimonials, should be sent before 11th November.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1, AND SOUTHAMPTON GROUP OF HOSPITALS. Applications invited for the joint appointment of SENIOR SURGICAL REGISTRAR, to start as soon as possible. Annual appointment up to 4 years. Successful candidate will work in Hospitals in the Southampton Group for approximately 2 years then at Westminster Hospital. Candidates must be F.R.C.S.

Applications (15 copies), with names of 3 referees, to reach House Governor, Westminster Hospital, by 16th November.

WOOLWICH GROUP HOSPITAL MANAGEMENT COMMITTEE.

SENIOR HOUSE OFFICER (Obstetrics). British Hospital for Mothers and Babies, Samuel-street, Woolwich. Recognised for M.R.C.O.G. or D.Obst.R.C.O.G. Vacant end of November.

HOUSE SURGEONS (Gynæcology and Obstetrics). Two posts vacant during December. One at St. Nicholas Hospital, Plumstead, recognised for D.Obst.R.C.O.G. or 3 months Obstetrics, 3 months Gynæcology for M.R.C.O.G. One at Memorial Hospital, recognised for M.R.C.O.G. (6 months Gynæcology). Small Obstetric Unit providing good experience.

Applications to Group Secretary, Memorial Hospital, Woolwich, S.E.18

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies on 15th January, 1958, for the following Senior House Officers:

2 HOUSE PHYSICIANS,
2 HOUSE SURGEONS.

Further particulars and form of application, which must be returned not later than 11th November, 1957, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy on 9th January, 1958, for a REGISTRAR in Clinical Pathology (full-time).

Further particulars and form of application, which must be returned not later than 11th November, 1957, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

WHIPPS CROSS HOSPITAL, Leytonstone, E.11. LEYTONSTONE (NO. 10) HOSPITAL GROUP. Applications are invited for the post of PÆDIATRIC HOUSE PHYSICIAN (pre- or post-registration) at above Hospital. The post, which is recognised for the D.C.H., falls vacant on 16th November, 1957.

Application forms from the Hospital Secretary, to be returned by 31st October.

ALTON GENERAL HOSPITAL, Alton. (136 Beds.) HOUSE SURGEON (pre-registration post) required for general surgery. Vacant 1st December.

Applications, with copies of 2 testimonials, to the Hospital Secretary.

ALTRINCHAM GENERAL HOSPITAL. Assistant SENIOR SURGICAL OFFICER (Junior Hospital Medical Officer grade). Applications are invited for this post in a hospital of 130 acute beds with a busy Casualty Department. The appointee would be required to exercise control of this Department and also to assist Resident Surgical Officer with the general surgical work of the Hospital. The post offers excellent opportunities of practical experience and postgraduate study to suitably qualified candidates and particularly those studying for higher surgical qualifications.

Applications, with names of 2 referees, to Group Secretary, North and Mid-Cheshire Hospital Management Committee, Sinderland-road, Altrincham, Cheshire.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE OFFICER for Special Departments (E.N.T., Pædiatric, Dermatology, &c.). 6 months' appointment, vacant 6th November, 1957. Not suitable for pre-registration candidates; offers good experience before general practice.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital immediately.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON for general surgical duties. 6 months' appointment, suitable for pre-registration candidates. Post vacant 27th November, 1957.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital immediately.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (resident) required for Casualty Department, Ashton-under-Lyne General Hospital. Appointment limited to 4 years. Minimum commencing salary £852 10s. p.a., but higher salary may be paid according to experience and qualifications. There may be some orthopædic duties to be undertaken by the holder of this post.

Apply, giving age, experience, qualifications and names of 2 referees, to Group Secretary, General Hospital, Ashton-under-Lyne.

BARNSTAPLE. NORTH DEVON INFIRMARY. (105 Beds.) HOUSE SURGEON (pre-registration); vacant now. The Hospital serves a wide area of pleasant countryside and the post affords good opportunity to study excellent clinical material.

Apply to Group Secretary, 19, Alexandra-road, Barnstaple.

BEBINGTON, CHESHIRE. CLATTERBRIDGE HOSPITAL WEST. CENTRAL WIRRAL GROUP. Applications are invited for the resident post of JUNIOR HOUSE MEDICAL OFFICER in the 63-Bed Radiotherapy Wing of the above Hospital. Supervoltage equipment will be used and valuable experience will be obtainable for those contemplating specialising in Radiotherapy. Whitley Council conditions of service—Salary £852 10s. to £1182 10s.

Apply on form from Secretary by 16th November, 1957.

BEDFORD GENERAL HOSPITAL. (436 Beds.) Senior HOUSE OFFICER in Medicine, now vacant, tenable for 12 months.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (436 Beds.) ORTHOPÆDIC HOUSE SURGEON required beginning of November. Pre- or post-registration; recognised for F.R.C.S. Post offers wide experience in a busy specialist orthopædic and traumatic unit.

Inquiries and applications, with copies of 2 recent testimonials, to be sent immediately to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (436 Beds.) House SURGEON required. Pre- or post-registration; recognised for F.R.C.S. Vacant beginning of November. Post offers exceptional opportunities for general experience in busy acute surgical units.

Inquiries and applications, with copies of 2 recent testimonials, to be sent immediately to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BIRMINGHAM ACCIDENT HOSPITAL, Bath-row, BIRMINGHAM, 15. (215 Beds and 8 House Surgeons.) HOUSE SURGEONS (resident). Vacant December. Hospital largest traumatic unit in country and treats over 50,000 new patients each year. Recognised for purpose of Casualty by R.C.S. (Eng.). Teaching programme by consultant staff. 6-month appointment, some of which may be spent in 42-bedded Medical Research Council's Burns Unit.

Apply, naming 2 referees, to Administrator within 6 days.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (780 Beds.) SENIOR HOUSE OFFICER (resident or non-resident) for Casualty Department (40,000 attendances a year), vacant 14th November, 1957. Post recognised for F.R.C.S. and tenable for 6 or 12 months.

Applications, with copies of 2 recent testimonials, to Group Secretary.

BIRMINGHAM, 15. ROYAL ORTHOPÆDIC HOSPITAL. SENIOR HOUSE OFFICER. Preferably with orthopædic experience. Recognised by Royal College of Surgeons. 336 Beds for long and short-term orthopædic cases (non-traumatic) and extensive outpatient services.

Applications, with testimonials or names of referees, to the Administrator.

BIRMINGHAM GROUP 9 HOSPITAL MANAGEMENT COMMITTEE. Whole-time JUNIOR HOSPITAL MEDICAL OFFICER for mental deficiency group of 1400 Beds. Scope for training in modern treatment methods. Recognised for D.P.M. Resident (single accommodation only) or non-resident.

Application forms may be obtained from the Secretary, Coleshill Hall Hospital, Coleshill, Birmingham.

BIRMINGHAM REGIONAL HOSPITAL BOARD AND UNITED BIRMINGHAM HOSPITALS. Whole-time SENIOR REGISTRAR in Radiodiagnosis. Duties at Coventry and Warwickshire Hospital and other hospitals in the Coventry group (9 notional half-days) and United Birmingham Hospitals (2 notional half-days). D.M.R.D. essential. Non-resident.

Application forms from Secretary, Regional Hospital Board, 10, Augustus-road, Birmingham 15, to be returned by 11th November.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) **Birmingham (Selly Oak) Group, Oak Tree-lane, Birmingham, 29**

REGISTRAR (anæsthetist), resident, for Birmingham Accident Hospital, Bath-row, Birmingham, 15. (215 Beds.) Vacant 1st November, 1957. Ample opportunity for study.

(2) **Mid-Worcestershire Group, Birmingham-road, Bromsgrove**

REGISTRAR (casualty) for Kidderminster and District General Hospital (112 Beds), required also to deputise for surgical registrar. Experience specialty essential. Higher qualification desirable. Resident or non-resident.

(3) **Birmingham (Dudley Road) Group, Dudley-road Hospital, Birmingham, 18**

(*a*) REGISTRAR (E.N.T. surgery) for Dudley Road Hospital, non-resident (approximately 40 E.N.T. beds). Post recognised for D.L.O. Experience specialty and higher qualifications an advantage.

(*b*) REGISTRAR (ophthalmology) for Birmingham and Midland Eye Hospital, Church-street, Birmingham (156 Beds). Resident. Previous ophthalmic experience essential. Possession of D.O. (England) an advantage. Wide experience available in all branches, including surgery.

(4) **Burton-on-Trent Group. General Hospital, Burton-on-Trent**

REGISTRAR (surgical). Whole-time, required immediately for duties at Burton-on-Trent General Hospital. Experience in surgery essential. F.R.C.S. desirable. Hospital recognised for F.R.C.S. Resident or furnished flat available for married officer.

Application forms from Group Secretaries to be returned by 4th November, 1957.

BIRMINGHAM. UNITED BIRMINGHAM HOSPITALS. THE BIRMINGHAM AND MIDLAND HOSPITAL FOR WOMEN, Showell Green-lane, SPARKHILL, BIRMINGHAM, 11. Applications are invited from registered medical practitioners for the post of RESIDENT GYNÆCOLOGICAL HOUSE SURGEON for duty with the Professorial Unit from the 1st December, 1957. The appointment is recognised for the M.R.C.O.G. and D.Obst.R.C.O.G.

Application forms obtainable from the House Governor at the above address, to be returned not later than 2nd November, 1957.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE GENERAL HOSPITAL. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade). The post offers wide experience in clinical pathology in a teaching hospital laboratory. The appointment is tenable for 1 year.

Application forms may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him as soon as possible.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL Ladywood-road, BIRMINGHAM 16. HOUSE OFFICERS (surgical) required to commence duty on 7th January, 1958, for 6 months. The posts rotate during the period giving good experience of general and special surgery. Recognised for preregistration students, but registered practitioners may apply.

Forms of application available from the House Governor, and should be returned to him by 16th November, 1957.

G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. Applications are invited for the post of RESIDENT MEDICAL OFFICER, second of 2 (Senior House Officer grade), vacant 1st January, 1958, for 1 year. Main duty to take charge of Infants Block (66 Cots). Valuable opportunity for further study of disease of infancy, some previous experience of which is desirable. M.R.C.P. preferred.

Forms of application available from the House Governor and should be returned to him by 9th November, 1957.

G. A. PHALP, Secretary to the Board of Governors.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 Beds.) HOUSE PHYSICIAN (House Officer of Senior House Officer grading according to experience).

Apply Group Secretary.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 acute beds.) ORTHOPÆDIC HOUSE SURGEON (first, second or third post), vacant now. Offers good opportunity for general experience in busy acute general hospital. Approved preregistration post. Fully registered practitioners may apply. Recognised for F.R.C.S.

Apply Group Secretary.

BATLEY. THE GENERAL HOSPITAL, Carlinghow HILL, BATLEY. Applications are invited for the post of HOUSE SURGEON (ophthalmic and general surgery), resident. The Hospital has 99 Beds, which are allocated to the specialties of general surgery; E.N.T., orthopædic and ophthalmology. The post is recognised for the Diploma in Ophthalmology.

Apply in writing to the Administrative Officer, enclosing copies of 2 testimonials.

BISHOP AUCKLAND, co. DURHAM. THE GENERAL HOSPITAL (350 Beds.) HOUSE SURGEON required. Recognised preregistration appointment. Accommodation available for married officer with no children.

Apply, naming 2 referees, to K. G. T. LUXFORD, Group Secretary, South West Durham Hospital Management Committee, at the above address.

BISHOP'S STORTFORD AND DISTRICT HOSPITAL, Rye-street, BISHOP'S STORTFORD, HERTFORDSHIRE. (67 Beds—Medical, Surgical and Maternity.) Applications are invited from registered medical practitioners for the post of RESIDENT SENIOR HOUSE OFFICER (Male). Salary £819 10s. p.a., less £150 for residential emoluments. To commence 1st November or as soon thereafter as possible.

Applications, stating age, nationality, qualifications and experience, with copies of recent testimonials or names of referees, to Hospital Secretary, Herts and Essex General Hospital, Bishop's Stortford, Herts.

BLACKBURN ROYAL INFIRMARY. (262 general beds.) BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required 22nd November, 1957. Post recognised for F.R.C.S. and approved for preregistration purposes.

Applications to Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn, Lancs.

BLACKBURN. ROYAL INFIRMARY. (262 general beds.) BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER (casualty and orthopædics) required immediately. Junior Hospital Medical Officer post can be for any period up to 4 years. Recognised for F.R.C.S.

Apply to Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

Group Laboratories

RESIDENT PATHOLOGIST (Senior House Officer grade). Vacant 1st November, tenable for 12 months and recognised for the Dip. Path.

Bolton District General Hospital (607 Beds)

RESIDENT HOUSE PHYSICIAN. Vacant 9th November, tenable for 6 months and recognised under the preregistration service scheme.

Applications, stating age, nationality, qualifications, experience and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BRIGHTON. NEW SUSSEX HOSPITAL FOR WOMEN, Windlesham-road. BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. Vacancy for HOUSE PHYSICIAN (Female) for 6 months commencing 2nd December, 1957. Open to preregistration candidates.

Applications, stating age, nationality, qualifications and experience, with copies of 3 testimonials and/or the names of referees, to be sent to the Administrative Officer by 8th November, 1957.

BURY ST. EDMUNDS. WEST SUFFOLK GENERAL HOSPITAL. (262 Beds.) Applications are invited for the following posts:—

(*a*) HOUSE OFFICER (Preregistration) or SENIOR HOUSE OFFICER for orthopædic and casualty duties; recognised for F.R.C.S. (surgical); vacant early January. A Junior Hospital Medical Officer is also employed.

(*b*) HOUSE PHYSICIANS for (i) general medical duties and (ii) pædiatric and general medical duties; vacant early December.

(*c*) HOUSE SURGEONS for (i) general surgical and other duties; and (ii) general surgical (latter recognised for F.R.C.S.); vacant early December and early January respectively.

(*d*) HOUSE SURGEON for gynæcological and obstetric duties, recognised for D.Obst.R.C.O.G.; vacant late December.

(*e*) HOUSE PHYSICIANS (Locum Tenens) for general medical duties for periods mid-October to early November and mid-November to early December.

All posts except (*a*) as shown are recognised for preregistration, but for post (*d*) considered advisable to have held previous appointment.

Applications to Hospital Secretary with testimonials or names of referees.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIANS (preregistration) required for Poole General Hospital on 22nd November, 1957, and for Poole General and Alderney Hospitals on 18th November, 1957.

Applications to the Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of GENERAL HOUSE SURGEON. The appointment is recognised for the F.R.C.S. examination and for preregistration purposes and becomes vacant on 21st November, 1957.

Applications to the Hospital Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT SENIOR HOUSE OFFICER (Anæsthetics). The post is recognised for the D.A. and F.F.A.R.C.S., becomes vacant on 3rd December, 1957, and is normally tenable for 12 months. Experience with Thoracic Unit available.

Applications to the Hospital Secretary.

BROMLEY HOSPITAL, KENT. Senior House Officer in charge Casualty Department, required 1st December. Recognised for F.R.C.S.

Apply, stating age, qualifications with dates, previous experience, and naming 3 referees, to Administrative Officer.

BURTON-ON-TRENT GENERAL HOSPITAL. Locum REGISTRAR (surgical) required at the above Hospital (approved for F.R.C.S.) on a week-to-week basis.

Applications, with full details, to Group Secretary, General Hospital, Burton-on-Trent.

BUXTON. DEVONSHIRE ROYAL HOSPITAL. (252 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER, vacant 1st December, 1957. This Hospital is a large special hospital for the treatment and rehabilitation of all types of locomotor disorders. Duties are mainly medical and include work in the long-stay unit of the Manchester University Rheumatism Research Centre. The Hospital is recognised under the regulations for the Diploma in Physical Medicine, Part II, and the post also offers good medical experience.

Applications, stating age, experience and qualifications, together with the names of 2 persons for reference, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, immediately.

CAMBRIDGE. THE UNITED CAMBRIDGE HOSPITALS. ADDENBROOKE'S HOSPITAL, CAMBRIDGE. MEDICAL REGISTRAR (non-resident) for 1 year in first instance from mid-December, renewable for second year.

Apply to Secretary, stating age, nationality, qualifications and experience with dates, and names of 3 referees, by 7th November.

CAMBRIDGE. THE UNITED CAMBRIDGE HOSPITALS. ADDENBROOKE'S HOSPITAL, CAMBRIDGE. CASUALTY OFFICER (Senior House Officer grade) from mid-December. Non-resident if desired.

Apply to the Secretary as soon as possible, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials.

CANTERBURY. KENT AND CANTERBURY HOSPITAL (277 Beds). GYNÆCOLOGICAL HOUSE SURGEON required at Highland Court annexe, a unit of 25 gynæcological beds situated 3 miles from the above Hospital, with all ancillary services available. Recognised for M.R.C.O.G. 6 months' appointment. Post vacant early in December, 1957. National Health Service salary and conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CARMARTHEN. WEST WALES GENERAL HOSPITAL. (188 Beds,) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (orthopædic and traumatic surgery) (recognised by the Royal College of Surgeons) which is now vacant. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, and names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

CARSHALTON, SURREY. QUEEN MARY'S HOSPITAL FOR CHILDREN. (General Children's Hospital of 700 Beds.) HOUSE SURGEON (House Officer) (resident) required for 6 months (3 months general surgery, 3 months E.N.T. and orthopædics). Recognised for D.C.H. Applicants must have completed 12 months Pre-registration Service.

Applications, stating age and qualifications, together with 1 recent testimonial and the names of 2 referees, should be submitted to the Group Secretary, immediately.

CARDIFF. GLAN ELY TUBERCULOSIS HOSPITAL, FAIRWATER, CARDIFF. SENIOR HOUSE OFFICER (resident) required at above Hospital.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF (near). PRINCE OF WALES ORTHOPÆDIC HOSPITAL, RHYDALFAR, near CARDIFF. SENIOR HOUSE OFFICER required. Regional orthopædic centre for South Wales area. 281 Beds and branch hospital of 70 Beds. Outpatient clinic in Cardiff. Full staff of Consultants and Registrars. Single accommodation available at Hospital at Rhydalfar.

Form of application from Group Secretary, 44, Cathedral-road, Cardiff.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the post of SENIOR HOUSE OFFICER (Medical) to the Miners' Chest Diseases Treatment Centre at Llandough Hospital, Penarth. The Centre caters for all types of chest diseases and it is closely associated with the adjoining Pneumoconiosis Research Unit of the Medical Research Council.

Application forms are available from the Secretary to the Board at the Cardiff Royal Infirmary, Newport-road, Cardiff, and should be returned within 14 days of the appearance of this advertisement.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the appointment of REGISTRAR to the Orthopædics and Fracture Departments, Cardiff Royal Infirmary, to commence duty as soon as possible.

Application forms are available from the Secretary to the Board, at the Cardiff Royal Infirmary, Newport-road, Cardiff, and should be returned within 14 days of the appearance of this advertisement.

CARDIFF. ST. DAVID'S HOSPITAL. Senior House OFFICER required for Accident Unit at above Hospital.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CHELMSFORD. ST. JOHNS' HOSPITAL. (Recognised for M.R.C.O.G.) RESIDENT GYNÆCOLOGICAL HOUSE SURGEON. Appointment to commence as soon as possible. Preference will be given to candidates who intend to obtain the Diploma of Membership of the Royal College of Gynæcologists.

Applications, stating age, nationality, qualifications and experience, together with recent testimonials, should be sent immediately to the Secretary, Chelmsford Group Hospital Management Committee, Chelmsford and Essex Hospital, London-road, Chelmsford.

CHELMSFORD AND ESSEX HOSPITAL. (161 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON. Pre-registration post. The post will become vacant during the middle of November, and offers good surgical experience. Recognised for the F.R.C.S.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botley's Park War Hospital). (430 Beds.) ORTHOPÆDIC HOUSE SURGEON (Senior House Officer, or House Officer (Intern) grade). 100 orthopædic beds. Post recognised for F.R.C.S. and Pre-registration Service. Salary in accordance with terms and conditions of National Health Service. Post vacant 1st November, 1957.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, Chertsey, as soon as possible.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botley's Park War Hospital). CASUALTY OFFICER (Senior House Officer) required from 14th November, 1957. Resident or non-resident. The appointment is mainly that of Outpatient Sorting Officer and gives time and opportunity for reading for a higher qualification. Recognised for F.R.C.S. Salary in accordance with terms and conditions of National Health Service. Applications for a 6-month appointment would be considered.

Applications, together with names and addresses of referees, to Physician-Superintendent, St. Peter's Hospital, as soon as possible.

CHESTERFIELD. SCARSDALE HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER for Geriatric Unit and for duties at Penmore Hospital. Full Consultant services. Excellent scope for doctor interested in this specialty. House available on service tenancy.

Applications, giving full particulars, with name of 3 referees, to Group Secretary, Chesterfield Hospital Management Committee, at Chesterfield Royal Hospital.

CHICHESTER. ROYAL WEST SUSSEX HOSPITAL (202 acute beds). RESIDENT HOUSE SURGEON required for 6 months' appointment. National salary scales for either provisionally or fully registered practitioners. Post approved for pre-registration practitioners and F.R.C.S. 8 residents. Vacant 17th November, 1957.

Applications, stating age, experience, qualifications, with references or names of referees, to Senior Administrative Officer.

CHICHESTER. ST. RICHARD'S HOSPITAL. Chichester GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of MEDICAL REGISTRAR, resident or non-resident, mainly at St. Richard's Hospital (400 Beds). Post vacant 1st January, 1958. Registrar will have care of 100 acute medical and paediatric beds under the supervision of the Consultant Physicians and Paediatrician, and will also assist the Consultant Neurologist, Chest Physician and Thoracic Surgeon. Salary according to terms and conditions of service of hospital medical staff. Candidates may visit the hospital.

Forms from Group Secretary, 174, Broyle-road, Chichester, to be submitted within 14 days.

CROMER AND DISTRICT HOSPITAL, Norfolk. Applications are invited for the post of RESIDENT MEDICAL OFFICER (Senior House Officer status). Post vacant 1st December, 1957, at a salary of £819 10s. p.a. in accordance with National Hospital Service conditions. This is a busy general hospital of 52 Beds, with an outpatient department where Consultants in all the major specialties hold regular sessions. The appointment thus offers practical experience of an all round kind particularly useful to those contemplating entry into general practice. Residential accommodation is available and occupancy of a very adequate furnished flat at the hospital is a condition of employment in the case of a married man.

Applications, stating age, qualifications, experience, sex, and the names of 2 referees, should be addressed to the Secretary, Cromer and District Hospital, Mill-road, Cromer.

CUCKFIELD HOSPITAL, Cuckfield, near Haywards HEATH. SENIOR HOUSE SURGEON (Orthopædic and Traumatic Unit). Post now vacant. Tenable 6 or 12 months.

Applications, giving age, nationality, qualifications and experience, and 2 referees, to Group Secretary, Mid-Sussex Hospital Management Committee.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. RADIOLOGICAL REGISTRAR, Papworth and Addenbrooke's Hospitals, Cambridge. Joint appointment by Regional Hospital Board and Board of Governors of United Cambridge Hospitals. Major portion of duties at Papworth Hospital (176 Beds for chest medicine—39 Beds for thoracic surgery). Appointment for 1 year, renewable for second year.

Applications, stating age, experience and the names of 3 referees, to the Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 4th November, 1957. Candidates invited to visit hospitals by direct arrangement with the Physician-Superintendent, Papworth Hospital.

DERBY CITY HOSPITAL. (Obstetrical Department—76 Beds.) DERBY NO. 1 HOSPITAL MANAGEMENT COMMITTEE. OBSTETRIC HOUSE SURGEON (pre-registration) or SENIOR HOUSE OFFICER required for duties at the Derby City Hospital.

Applications, stating age, qualifications and experience, with copies of 2 testimonials, should be sent to the Medical Superintendent, City Hospital, Derby, as soon as possible.

DERBY. DERBYSHIRE ROYAL INFIRMARY. (416 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT OR NON-RESIDENT MEDICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th November, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DERBY. DERBYSHIRE ROYAL INFIRMARY. (396 Beds. Hospital recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT SURGICAL REGISTRAR required 28th December. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th November, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DONCASTER ROYAL INFIRMARY. (330 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required 15th December. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th November, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DONCASTER. WESTERN HOSPITAL. (Recognised for the M.R.C.O.G. and D.Obst.R.C.O.G.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (Obstetrics and Gynæcology) required immediately. (95 obstetric and gynæcology beds.) Appointment for 1 year in first instance.

Apply Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th November, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP, BIRMINGHAM REGION.

The Guest Hospital, Dudley. (154 Beds.)

CLINICAL ASSISTANT in E.N.T. Surgery, to assist at Outpatient Department on Monday and Tuesday afternoons.

Applications, with references, to Group Secretary, Guest Hospital, Dudley.

SENIOR HOUSE OFFICER (anæsthetics). Post recognised for D.A. Successful candidate will be required to visit other hospitals in the Group.

Applications, giving the names of 2 referees, to the Group Secretary, Guest Hospital, Dudley, Worcs.

SENIOR HOUSE OFFICER (surgical). Post vacant November, 1957.

HOUSE OFFICER (surgical), pre-registration. Post vacant now.

Apply Group Secretary, Guest Hospital, Dudley, Worcs.

DURHAM COUNTY HOSPITAL. (116 Beds.) Senior HOUSE OFFICER in Orthopædics required immediately. Resident. The County Hospital is the main Orthopædic and Accident Hospital in a busy mining and industrial area. Experience can be obtained in all branches of orthopædics.

Applications, with particulars of previous experience and names of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

DURHAM COUNTY HOSPITAL. (116 Beds.) Resident HOUSE SURGEON required in Orthopædics and Casualty. Post recognised for pre-registration purposes. This post offers facilities for good and varied experience in a busy orthopædic and accident hospital which serves a wide mining and industrial area.

Apply, giving age, experience and names of 2 referees, to the Group Secretary, Dryburn Hospital, Durham.

EAST GRINSTEAD. QUEEN VICTORIA HOSPITAL. PLASTIC SURGERY AND JAW INJURIES CENTRE. TUNBRIDGE WELLS GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for resident appointment of SENIOR HOUSE OFFICER in Anæsthetics, vacant 7th December, 1957. Duties in anæsthesia for both general and plastic surgery. Post recognised for examinations of D.A. and F.F.A.R.C.S.

Apply, stating qualifications, experience, age, and names of 3 referees, by 11th November, 1957, to Group Secretary, Sherwood Park, Pembury-road, Tunbridge Wells.

EDINBURGH. THE ROYAL EDINBURGH HOSPITAL FOR MENTAL AND NERVOUS DISORDERS. Applications are invited for the appointment of SENIOR HOUSE OFFICER, resident or non-resident, in this teaching hospital with good opportunities of training in psychiatry. Appointment for 1 year.

Applications, stating qualifications, experience and names of 2 referees, to Physician-Superintendent, Royal Edinburgh Hospital, Morningside-place, Edinburgh, 10, as soon as possible.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. ENFIELD GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON (pre-registration post), vacant now. Duties with General Surgical Unit, doing some genito-urinary work. Post recognised by the Royal College of Surgeons.

Application, with names and addresses of 2 referees, to the Group Secretary at Chase Farm Hospital.

EPPING. ST. MARGARET'S HOSPITAL. Senior House OFFICER as Casualty Officer and Orthopædic House Surgeon. Duties to commence 3rd December. Recognised training post for F.R.C.S.

Applications, with copies of 2 recent testimonials, to be sent to the Group Secretary, Epping Group H.M.C., Oak Cottage, The Plain, Epping, Essex, by 9th November, 1957.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. 2 RESIDENT OBSTETRIC HOUSE SURGEONS for above Hospital. Posts vacant 30th November and 5th December, 1957. 6 months' appointments. 1 post recognised for pre-registration purposes. Both posts recognised for M.R.C.O.G.

Applications, stating age, qualifications, experience and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 31st October, 1957.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) MEDICAL REGISTRAR, whole-time, non-resident, required at above Hospital. Post vacant early November, 1957. Hospital may be visited by direct appointment with Medical Director.

Application forms obtainable from and returnable to Group Secretary, Hendon Group Hospital Management Committee, Edgware General Hospital, Edgware, by 7th November, 1957.

EPSOM DISTRICT HOSPITAL. Dorking-road, Epsom, SURREY. RESIDENT HOUSE PHYSICIAN required 6th December. Pre-registration post.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary at above address.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE PHYSICIAN required immediately. Fully registered post.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary at above address.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE SURGEON required 11th December. Pre-registration post recognised for F.R.C.S.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary at above address.

EPSOM. THE MENTAL HOSPITALS' GROUP LABORATORY. SOUTH-WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for a non-resident, whole-time post of REGISTRAR in Pathology. The Laboratory affords facilities for training and experience in all branches of pathology with opportunities for specialisation and research. In addition to working at the Laboratory, the person appointed will be required to visit and work at the hospitals served by the Laboratory.

Application forms may be obtained from the Group Pathologist, Mental Hospitals' Group Laboratory, at West Park Hospital, Epsom, from whom full information may be obtained and with whom an appointment to see the Laboratory may be arranged. Closing date for applications 11th November, 1957.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. Applications are invited from pre-registration and registered medical practitioners for the post of HOUSE SURGEON (general surgery). Vacant now.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary immediately.

GLASGOW NORTHERN HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the post of SENIOR HOUSE OFFICER in Pathology and Hæmatology at Stobhill General Hospital, Glasgow. The appointment will be for 1 year in the first instance.

Applications, stating age, qualifications, experience, and present appointment and naming 2 referees, to be lodged with the Secretary, 13, Woodside-place, Glasgow, C.3, by 31st October, 1957.

GREENOCK. GATESIDE I.D. HOSPITAL. Board of MANAGEMENT FOR GREENOCK AND DISTRICT HOSPITALS. Applications are invited from suitably qualified medical practitioners for the appointments of RESIDENT JUNIOR HOSPITAL MEDICAL OFFICERS. Good experience offered in the diagnosis and treatment of infectious diseases including venereal diseases. Well equipped Clinical Laboratory. The appointments will be subject to the National Health Service (Scotland) superannuation regulations.

Applications, giving details of age, experience, and qualifications, together with copies of 3 recent testimonials or names of referees, should be forwarded to the Group Secretary and Treasurer, 47, Eldon-street, Greenock, within 14 days from date of insertion.

GRIMSBY GENERAL HOSPITAL. Applications are invited for CASUALTY OFFICER (Senior House Officer grade) with some E.N.T. duties. Post vacant in November. Appointment recognised for F.R.C.S. The staffing of the department is a Senior Casualty Officer and 2 Senior House Officers. Up-to-date medical library and reading facilities available.

Applications, with names and addresses of 2 referees, to Hospital Secretary.

GUILDFORD GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. The post of Full-time REGISTRAR to the Orthopædic and Traumatic Unit (60 Beds) serving the Group will become vacant on 14th December, 1957. The appointment is for 1 year in the first instance and may be renewed for a further year. It is non-resident and the candidate appointed will be required to live within a short distance of Royal Surrey County Hospital. The post provides good facilities for training and experience in short-term orthopædic and traumatic surgery. The hospital may be visited by arrangement.

Application forms from Group Secretary, St. Luke's Hospital, Guildford, to whom they should be returned by 9th November, 1957.

HAYWARDS HEATH, SUSSEX. HURSTWOOD PARK HOSPITAL. SENIOR HOUSE SURGEON (Neurosurgical) (resident) required at the above Hospital. Suitable accommodation available. Salary in accordance with the terms and conditions of service with appropriate deduction for residence.

Applications, with the names and addresses of 3 referees, to the Secretary to the Hospital Management Committee, St. Francis Hospital, Haywards Heath, Sussex.

HAROLD WOOD HOSPITAL, Harold Wood, Essex. (415 Beds.) Applications are invited for the post of HOUSE SURGEON (orthopædics), (first post pre-registration). Appointment for 6 months. Duties in General Surgery and in Traumatic and Orthopædic Unit.

Applications to Hospital Secretary.

HITCHIN. NORTH HERTS HOSPITAL. Applications are invited for the post of RESIDENT HOUSE SURGEON, now vacant. Recognised for the F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator, Lister Hospital, Hitchin, as soon as possible.

HUDDERSFIELD ROYAL INFIRMARY. Huddersfield HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from provisionally registered medical practitioners for the post of HOUSE SURGEON to the Princess Royal Maternity Home (57 Beds), to commence duty on 1st December, 1957. The holder of the post, which is recognised for the D.Obst.R.C.O.G., will have access to the abnormal maternity and gynæcological beds at The Royal Infirmary. The Department is under the control of 2 Consultant Obstetricians and Gynæcologists. Salary in accordance with national scale.

Applications, with copies of 3 recent testimonials, to be addressed to—

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (285 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required to commence duty immediately. The post is recognised as a pre-registration appointment and for the F.R.C.S. Salary in accordance with National scales.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD. ST. LUKE'S HOSPITAL. (235 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT MEDICAL OFFICER (Senior House Officer grade) at the above Hospital, to commence duties immediately. The Hospital caters for chronic sick, children, maternity and acute medical and surgical patients. Salary, in accordance with the terms and conditions of service for hospital medical and dental staffs, £819 10s. p.a.

Applications, together with copies of 3 recent testimonials, to be sent to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

ILFORD. KING GEORGE HOSPITAL, Eastern-avenue, ILFORD. There will be the following vacancies for HOUSE SURGEONS at above Hospital :—

First or second post pre-registration—17th December.
Second post pre-registration—8th December.
Both posts will be tenable for 6 months.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary, Ilford and
Barking Group Hospital Management Committee.

ILFORD. KING GEORGE HOSPITAL, Eastern-avenue, ILFORD. There will be a vacancy for a HOUSE PHYSICIAN at above Hospital on the 3rd December, 1957. First or second post pre-registration. The post will be tenable for 6 months.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary, Ilford and
Barking Group Hospital Management Committee.

IPSWICH AND EAST SUFFOLK HOSPITAL, Heath-ROAD WING, IPSWICH. (280 Beds.) Post of HOUSE PHYSICIAN (pre-registration) vacant 14th November, 1957.

Applications, stating qualifications, age, nationality, &c., with copies of 3 recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. Applications are invited for the post of HOUSE PHYSICIAN, vacant on 23rd November, 1957. Approved pre-registration post.

Applications, stating age, nationality and experience, together with copies of 3 recent testimonials, to reach the Hospital Secretary by 4th November, 1957.

IPSWICH AND EAST SUFFOLK HOSPITAL, Heath-road WING, IPSWICH (280 Beds). Applications invited for post of NON-RESIDENT CASUALTY OFFICER (Senior House Officer), vacant immediately. Day-time duties only, offering opportunity of study for higher examinations.

Applications, with full details, to the Hospital Secretary.

KEIGHLEY AND DISTRICT VICTORIA HOSPITAL, KEIGHLEY, YORKS. (General—139 Beds.) 2 RESIDENT HOUSE SURGEONS (either sex).

General surgery and E.N.T., vacant 1st November.
General surgery and orthopædics, vacant 1st November.
Both recognised for F.R.C.S. and approved pre-registration appointments, tenable for 6 months in first instance. 4 residents on staff.

Applications, with full particulars as to age, nationality, and qualifications, and copies of 2 testimonials, to Group Secretary, St. John's Hospital, Keighley, Yorks.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. Senior HOUSE OFFICER required for Psychiatric Unit. Duties mainly in observation wards. Post recognised by Conjoint and Royal Medico-Psychological Association as D.P.M. training post.

Applications, stating age, nationality, qualifications and experience with copies of up to 3 recent testimonials, to Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 5th November, 1957.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. House OFFICER, Traumatic and Orthopædic Surgery Unit (58 Beds). Recognised for F.R.C.S. Post vacant 1st December, 1957. Preference given to pre-registration candidates.

Applications, stating age, nationality, qualifications and experience with copies of up to 2 recent testimonials to Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 5th November.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Plastic Surgery

St. James's Hospital, Leeds (non-resident). Special Plastic and Maxillo-Facial Unit. (72 Beds.)

Psychiatry

(i) Menston Hospital, near Leeds (2500 Beds).

(ii) Oulton Hall Hospital, near Wakefield, and Affiliated Mental Deficiency Colonies (approximately 400 Beds). Non-resident.

(iii) Stanley Royd Hospital, Wakefield (2000 Beds). Recognised for D.P.M.

(iv) Storthes Hall Hospital, Kirkburton, Huddersfield (2750 Beds).

If desired, facilities for attendance at the Leeds University will be provided, if the successful candidates are studying for the D.P.M.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 30th October, 1957.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Chest Diseases

Scotton Banks Sanatorium, Knaresborough. (200 staffed Beds.) Visiting staff includes Teaching Hospital Consultants. Resident.

Infectious Diseases

Leeds Road Hospital, Bradford (120 infectious diseases beds). Resident.

General Medicine

Halifax Group (110 general medical beds) (380 geriatric beds). Duties divided equally between general medicine and geriatrics. Non-resident.

Orthopædic Surgery

Marguerite Hepton Memorial Orthopædic Hospital, Thorpe Arch, Wetherby (78 long stay children's beds). A 3-bedroomed, partly furnished house, is available in the hospital grounds.

Psychiatry

Storthes Hall Hospital, Kirkburton, near Huddersfield (2680 Beds), and associated clinics. Accommodation available for a single person. Facilities for attendance at the Leeds University will be provided if the successful candidate is studying for the D.P.M.

Rheumatism Research

Leeds Regional Hospital Board in association with the University of Leeds invites applications for the post of Research Registrar in Rheumatism to assist the Professor of Clinical Medicine with research projects at the Royal Bath Hospital, Harrogate, which is the centre for the Regional Rheumatism Scheme, or elsewhere in the Region.

Applications, stating age (sex in the case of Registrar in Rheumatism Research), qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 6th November, 1957.

LEEDS. THE UNITED LEEDS HOSPITALS. Applica-tions are invited for the post of ASSISTANT RESIDENT MEDICAL OFFICER at the General Infirmary at Leeds. The post is of Registrar status and will be tenable for 1 year from 1st January, 1958, in the first instance.

Applications, stating age, qualifications, previous posts with dates, together with the names of 3 referees, should be forwarded not later than 30th October, 1957, to the Sub-Dean, School of Medicine, Leeds, 2.

LEEDS. THE UNITED LEEDS HOSPITALS. Senior HOUSE OFFICER in General Medicine required for duties at the General Infirmary at Leeds and the pre-convalescent annexe. Residential accommodation available for single person, house available for married officer, at reasonable rental. Appointment tenable for 1 year. Post vacant 1st November, 1957.

Applications, stating age, qualifications, and experience and 3 names for reference, to be sent to the Secretary to the Board, The General Infirmary, Leeds, 1, by not later than 30th October, 1957.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. REGISTRAR required for the Radiotherapy Centre. Candidates with D.M.R. preferred. The post will be tenable for 1 year in the first instance and renewable for a second. Terms and conditions of service for hospital medical staff apply.

Applications, stating age, qualifications, previous posts with dates, with 3 names for reference, should be sent to the Sub-Dean, School of Medicine, Leeds, 2, by 8th November, 1957.

LEICESTER GENERAL HOSPITAL. (454 Beds. Recog-nised for training for the F.R.C.S. examination). Sheffield Regional Hospital Board. Whole-time RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th November, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LINCOLN COUNTY HOSPITAL, Sewell-road, Lincoln. (200 Beds.) Applications are invited from pre-registration candidates for appointment as HOUSE SURGEON for 6 months, to be followed, if satisfactory, by appointment as House Physician for a further 6 months.

Full particulars should be sent to R. W. HOWICK, Group Secretary.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (197 Beds.) HOUSE PHYSICIAN. Vacancy suitable for fully qualified or pre-registration applicant. Post vacant 15th November, 1957.

Applications, with copies of 2 recent testimonials, to be sent to Hospital Secretary.

LIVERPOOL REGIONAL HOSPITAL BOARD. LIVERPOOL RADIUM INSTITUTE. Applications are invited for the post of REGISTRAR IN RADIOTHERAPY with duties at the above Hospital. Preference will be given to applicants in possession of the D.M.R.T. or an equivalent qualification.

Forms of application from Dr. T. LLOYD HUGHES, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be returned not later than 9th November, 1957.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a post of SENIOR REGISTRAR in Radiology for the period from 1st January to 30th September, 1958. Annual reappointment thereafter until completion of the normal period of training will be considered without need for further application.

Apply by 9th November on form obtainable from the Secretary, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a post of REGISTRAR in Orthopædics for the year beginning 1st January, 1958. Annual reappointment thereafter until completion of the normal period of training will be considered without need for further application.

Apply by 9th November on form obtainable from the Secretary, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a post of REGISTRAR in Pathology for duties initially at the Women's Hospital to take up duty as soon as possible for the period to 30th September, 1958. Annual reappointment thereafter until completion of the normal period of training will be considered without need for further application.

Apply by 9th November on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LLANDUDNO GENERAL HOSPITAL, Llandudno. Applications are invited for HOUSE SURGEON at above Hospital (Recognised for F.R.C.S.). The appointment is for a period of 6 months. Salary and conditions of service in accordance with those approved by the Ministry of Health.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, to be forwarded to the Group Secretary, Caernarvon and Anglesey Hospital Management Committee, Plas Gwyn, Ffriddoedd-road, Bangor, within 10 days of the appearance of this advertisement.

MACCLESFIELD HOSPITAL. (301 Beds.) Vacancy— SENIOR HOUSE OFFICER in Medicine. Department has 56 acute beds together with some chronic sick beds; excellent opportunities available for gaining valuable experience.

Apply immediately, with full particulars and names of 2 referees, to Group Secretary, Macclesfield and District Hospital Management Committee, "Willerby House," Cumberland-street, Macclesfield.

MANCHESTER, 20. CHRISTIE HOSPITAL AND HOLT RADIUM INSTITUTE. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered practitioners for the post of ASSISTANT RESIDENT SURGICAL OFFICER (Senior House Officer grade). The post provides experience in the treatment of tumours and good opportunity for study.

Applications, with full details, including the names of 2 referees to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, immediately.

MANCHESTER REGIONAL HOSPITAL BOARD. Bury AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. FAIRFIELD GENERAL HOSPITAL, BURY, LANCS. Applications are invited for the post of REGISTRAR in Obstetrics and Gynæcology at the above hospital. The post is recognised for the D.Obst.R.C.O.G. There is a bungalow available at the hospital for the occupier of this post.

Apply, stating full details of experience, qualifications and names of 2 referees, to

H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD and UNITED MANCHESTER HOSPITALS. SENIOR REGISTRAR in Surgery in the Preston and Chorley group of hospitals, mainly at Preston Royal Infirmary. The post is included in the regional rotation scheme and it is expected that the person appointed will later transfer to the Manchester Royal Infirmary.

Application forms from the Senior Administrative Medical Officer of the Board, Cheetwood-road, Manchester, 8, to be returned by 11th November, 1957.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the full-time post of ORTHOPÆDIC REGISTRAR in the Ashton, Hyde and Glossop Group of hospitals, with duties mainly at Ashton-under-Lyne General Hospital. There are approximately 40 orthopædic beds and busy Orthopædic and Casualty Outpatients Department. The post is recognised for additional training under F.R.C.S. regulations and is vacant on 5th November.

Applications, stating age, nationality, qualifications and experience, with copies of 2 references, should be forwarded to the Group Secretary, Ashton, Hyde and Glossop Hospital Management Committee, General Hospital, Ashton-under-Lyne, Lancashire, as soon as possible.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. RESIDENT SURGICAL OFFICER (Registrar) to commence on 2nd January, 1958. Appointment for 12 months, renewable.

Application form, obtainable from the undersigned, to be returned by 9th November, 1957. G. H. TAYLOR, Secretary.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics, vacant 1st January, 1958. Applicants must have had previous hospital experience in general medicine and surgery, and in obstetrics. The post is recognised for the purposes of the M.R.C.O.G. examination. The duties involve clinical responsibility for mothers and babies and supervision of the work of pre-registration House Officers is also included. The appointment is for 12 months. National scales.

Application forms may be obtained from the undersigned and returned not later than 4th November, 1957.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of HOUSE OFFICER in Obstetrics for 6 months from 1st January, 1958. Salary in accordance with National scales.

Application forms may be obtained from the undersigned and returned not later than 4th November, 1957.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade), vacant shortly. Candidates must have held house appointments but previous laboratory experience is not essential. The duties will consist of routine work in the Department of Clinical Pathology, mainly at Saint Mary's Hospitals, but the holder of the post will also spend some time in the Manchester Royal Infirmary.

Application to be made on forms obtainable from the undersigned and submitted by 4th November, 1957.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

NEWCASTLE REGIONAL HOSPITAL BOARD Registrar OBSTETRICIAN AND GYNÆCOLOGIST, whole-time, Tees-side group of hospitals—main hospital Middlesbrough Maternity (80 Beds). Post affords good obstetrical and gynæcological experience. Single accommodation available.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, within 14 days.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD and the **BOARD OF GOVERNORS OF THE ROYAL FREE HOSPITAL.** Applications are invited for the post of SENIOR REGISTRAR in Medicine. During the first 2 years the successful candidate will be appointed to Hillingdon Hospital, Middlesex (General, 621 Beds), and during the second 2 years to the Royal Free Hospital (983 Beds). Candidates should have had wide experience in general medicine. Hospitals may be visited by direct appointment.

Application forms from and returnable to Group Secretary, Uxbridge Group Hospital Management Committee, The Furze, Pield Heath-road, Hillingdon, Middlesex, by 5th November.

NOTTINGHAM. CITY HOSPITAL. (811 Beds.) Applications are invited for the post of RESIDENT PATHOLOGIST (Senior House Officer). Previous experience an advantage. Post vacant 14th November, 1957.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (811 Beds.) Applications are invited for the post of HOUSE SURGEON, vacant 4th November, 1957. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. A Senior House OFFICER (orthopædic and fracture) required as soon as possible. Post offers exceptional experience in traumatic surgery. Locum considered for any period.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. (452 Beds. Recognised for D.Path.) **SHEFFIELD REGIONAL HOSPITAL BOARD.** Whole-time RESIDENT or NON-RESIDENT REGISTRAR (pathology) required 1st December. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 11th November, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

OXFORD. UNITED OXFORD HOSPITALS. THE RADCLIFFE INFIRMARY. Applications are invited for the post of REGISTRAR/RESEARCH ASSISTANT to the Accident Service from the 1st December, 1957. The duties of this post will be divided equally between the clinical duties of the Registrar appointment, and research work in the Department, under the supervision of the Director of the Accident Service.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should be received not later than 8th November, 1957.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for post of NON-RESIDENT REGISTRAR in the Tuberculous Meningitis Unit at the Osler Hospital, Headington, Oxford, commencing on 1st November, 1957. The post will be for 1 year in the first instance, but eligible for extension to a second year.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should be received as soon as possible.

NEWMARKET GENERAL HOSPITAL, Suffolk. Applications are invited for the post of SENIOR HOUSE OFFICER for Orthopædic and Casualty duties, which falls vacant in early December. The post is resident.

Applications, giving age, experience and qualifications, together with 3 recent testimonials, should be sent to the Medical Superintendent.

PLYMOUTH. MOUNT GOLD ORTHOPÆDIC HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER for the Orthopædic and Fracture Service centring on Mount Gold Orthopædic and associated hospitals. Post recognised by R.C.S.

Applications, stating age, qualifications with dates, &c., and with copies of 2 recent testimonials, to be forwarded to the Secretary, Mount Gold Hospital, Plymouth, within 14 days of this advertisement appearing.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

SENIOR HOUSE OFFICER, vacant 1st December, 1957. Devonport Hospital. Recognised for the F.R.C.S.

Applications to the Group Secretary, 7, Nelson-gardens, Devonport.

HOUSE SURGEON (pre-registration post), vacant 2nd November, 1957. Devonport Hospital. Recognised for the F.R.C.S.

Applications to the Group Secretary, 7, Nelson-gardens, Devonport.

HOUSE PHYSICIAN (pre-registration post), vacant 1st January, 1958.

Applications to the Group Secretary, Greenbank Road Hospital, Plymouth.

HOUSE SURGEONS (pre-registration posts), vacancies 9th December, 1957, 1st and 4th January, 1958. Recognised for the F.R.C.S.

Applications to the Group Secretary, Greenbank Road Hospital, Plymouth.

PÆDIATRIC HOUSE PHYSICIAN (pre-registration post), vacant 1st January, 1958. Recognised for the D.C.H.

Applications to the Group Secretary, Freedom Fields Hospital, Plymouth.

In all cases send names of 3 referees.

PONTEFRACT GENERAL INFIRMARY. House Surgeon required. This is an approved pre-registration post under Medical Act, 1950, but applications will be considered from fully registered practitioners. Hospital approved under F.R.C.S. regulations and provides excellent surgical experience. Married accommodation available. Post vacant 31st October, 1957.

Applications to the Secretary, Pontefract and Castleford Hospital Management Committee, Great Northern House, Salter-row, Pontefract, Yorkshire, as soon as possible.

POOLE GENERAL HOSPITAL, Longfleet-road, Poole. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEONS (pre-registration) required for 25th November and 15th December, 1957. Posts recognised for F.R.C.S. and F.R.C.S.Ed.

Applications to the Hospital Secretary.

PORTSMOUTH EYE AND EAR HOSPITAL. Portsmouth GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of RESIDENT OPHTHALMIC REGISTRAR at the above Hospital, vacant 1st March, 1958. Preference will be given to candidates holding a specialist qualification recognised for F.R.C.S. and D.O.

Forms of application may be obtained from the Group Secretary, Portsmouth Group Hospital Management Committee, Saint Mary's Hospital, Portsmouth, which should be returned to him duly completed on or before 4th November, 1957. Canvassing will disqualify but it is hoped that candidates will visit the Hospital by arrangement with the Group Secretary.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

(i) **Infectious Diseases Hospital**

SENIOR HOUSE OFFICER required with duties also on the Tuberculosis Wards and the Poliomyelitis Diagnostic and Respiratory Centre. Vacant now.

(ii) **Royal Portsmouth Hospital**
Orthopædic Department (104 Beds)

HOUSE OFFICER (pre-registration), vacant 1st November, 1957.

Applications, stating age, experience and qualifications, together with the names of 2 referees, should be forwarded as soon as possible to E. H. HURST.

St. Mary's Hospital, Milton-road, Portsmouth.

SALFORD. HOPE HOSPITAL. Salford Hospital Management Committee. Locum SURGICAL HOUSE OFFICER required for approximately 3 months.

Apply immediately to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (398 Beds.) Applications are invited from registered and provisionally registered medical practitioners, Male and Female, for resident post of HOUSE SURGEON, vacant 1st December, 1957, and tenable for 6 months.

Write, before 15th November, stating age, qualifications with dates, nationality, present post, with copies of 2 recent testimonials, to Secretary.

READING AREA DEPARTMENT OF MEDICINE. Applications are invited from registered and provisionally registered medical practitioners for 2 posts as RESIDENT HOUSE PHYSICIAN vacant 1st December, 1957, for a period of 6 months. Successful candidates will be required to carry out duties at the following Reading hospitals: Royal Berkshire (398 Beds), Battle (390 Beds), and Prospect Park (104 Beds).

Write immediately, stating age, qualifications with dates, nationality, present post, with copies of 2 recent testimonials, to Secretary, Royal Berkshire Hospital, Reading.

READING. BATTLE HOSPITAL. (391 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT JUNIOR HOUSE SURGEON in the Accident and Orthopædic Department. Post vacant 1st November, 1957. F.R.C.S. recognised. Also casualty duties.

Apply, stating age, qualifications with dates, nationality, present post, with 1 copy of recent testimonial, to Hospital Secretary.

ROCHESTER, KENT. ST. BARTHOLOMEW'S HOSPITAL. (Recognised for F.R.C.S.) MEDWAY AND GRAVESEND HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of CASUALTY OFFICER (Senior House Officer grade) which offers good experience with fractures and emergency surgery. Post vacant now. Tenable for 12 months. Salary £819 10s. p.a.

Applications, stating age, nationality, qualifications and experience, with recent testimonials, to be addressed to the Hospital Secretary.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) RESIDENT HOUSE SURGEONS (2) required from 1st December, 1957, in the General Surgical Unit. Recognised for F.R.C.S. Open to either pre-registration applicants or to fully qualified practitioners. This very active unit of a total of approximately 180 Beds affords ample opportunities for candidates to obtain first-class tuition and experience. The candidates appointed will be attached to a unit of approximately 60 Beds.

Applications should be forwarded to the Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

SALISBURY GENERAL HOSPITAL. Locum Resident HOUSE SURGEON required from 2nd November, to 30th November, 1957.

Apply as soon as possible, giving the names and addresses of 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. RADIODIAGNOSIS. DUNDEE TEACHING HOSPITALS. Applications are invited for an appointment as SENIOR REGISTRAR in Radiodiagnosis at Dundee Royal Infirmary (534 Beds), the main general teaching Hospital associated with the University of St. Andrews. Salary and conditions of service in accordance with National Agreement.

Forms of application and further particulars from the Secretary to the Board, 430, Blackness-road, Dundee, with whom applications must be lodged not later than 2nd November, 1957.

SHEFFIELD. CITY GENERAL HOSPITAL. (658 Beds.) Recognised for F.R.C.S. examination.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT CASUALTY REGISTRAR required 23rd November. The successful candidate to reside at the Hospital when on duty (including "on call" duty). Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th November, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited for the following posts:—

(*a*) REGISTRAR in Psychiatry required to work under the Consultant Psychiatrist and Professor of Psychiatry in the newly established Psychiatric Department. There will be opportunities for postgraduate training and research.

(*b*) Resident post of REGISTRAR or SENIOR HOUSE OFFICER at the Children's/Jessop Hospital, in association with the Department of Child Health in the University of Sheffield. The post is a rotating one between the 2 hospitals, alternating with another Registrar, so that the successful candidate will spend half his time in charge of the newborn babies at the Jessop Hospital and half his time in the Professorial Department at the Children's Hospital. Post vacant 10th December.

Applications for the above posts should state age, qualifications and experience, give the names of 3 referees, and be sent not later than 5th November, 1957, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL INFIRMARY. Applications invited for the non-resident or resident post of CASUALTY AND ORTHOPÆDIC REGISTRAR in the Orthopædic and Accident Department at the above Hospital. Post vacant 4th December. Post recognised for Casualty requirements for the final F.R.C.S.

Applications, stating age, qualification and experience, with the names of 3 referees, should be sent not later than 2nd November, 1957, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS BOARD OF GOVERNORS and SHEFFIELD REGIONAL HOSPITAL BOARD. Reciprocal training scheme for Senior Registrars. Whole-time SENIOR REGISTRAR in Anæsthetics required with initial tenure of appointment at the City General Hospital, Sheffield (680 Beds), a large general hospital having teaching affiliations with the University of Sheffield and with Professorial Medical and Gynæcological Units, a Department of Thoracic Surgery and a Regional Cardiological Centre. Appointment for 1 year in first instance and renewable thereafter annually. Incumbent will be transferred to the Teaching Hospitals for the second phase of the appointment in accordance with arrangements under the Reciprocal Training Scheme. Renewal of appointment and transfer to the Teaching Hospitals will be subject to satisfactory work and progress.

Further details and form of application from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10. Forms to be returned by 11th November, 1957.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. RESIDENT LOCUM ANÆSTHETIC REGISTRAR required 1st–14th November.

Applications, with names of 2 referees, to Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. MEDICAL REGISTRAR required. Resident or non-resident (resident when nights on duty).

Application forms from and returnable to Secretary, Windsor Hospital Management Committee, Alma-road, Windsor, by 2nd November.

SHOREHAM-BY-SEA. SOUTHLANDS HOSPITAL. WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON, post recognised by R.C.S. for Fellowship; entails duties in general surgery and orthopædics. Vacant 21st November.

Applications to Secretary, Southlands Hospital, Shoreham-by-Sea, Sussex. A. V. OAKTON, Group Secretary.

SHREWSBURY. ROYAL SALOP INFIRMARY/COPTHORNE HOSPITAL. (500 Beds.) HOUSE SURGEON. Vacant 1st November, 1957. Pre-registration candidates eligible. Recognised for the F.R.C.S.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. EYE, EAR AND THROAT HOSPITAL. SENIOR HOUSE OFFICER (E.N.T.). Duties at E.N.T. Hospital (68 Beds) and Copthorne Hospital (168 Beds). Post recognised for the D.L.O.R.C.S. Vacant immediately.

Applications, with copy testimonials, to the Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in General Surgery to fill a vacancy in the approved trainee establishment in the Medway and Gravesend group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staff (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 9th November, 1957.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for a whole-time appointment as RESIDENT SURGICAL OFFICER to fill a vacancy in the approved establishment at the Mid-Kent group of hospitals. Duties will be mainly at the West Kent General Hospital. The salary will be £1061 10s. p.a. and the appointment will be in accordance with the terms and conditions of service of hospital medical and dental staff (England and Wales) and will be for 1 year in the first instance, renewable for a further year.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 9th November, 1957.

SOUTHAMPTON EYE HOSPITAL. (32 Beds. Recognised for D.O. Examination.) RESIDENT SENIOR HOUSE OFFICER required in December.

Applications, with copies of testimonials, should be forwarded as soon as possible to Secretary, Southampton Group Hospital Management Committee, Bullar-street.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (274 Beds.) RESIDENT HOUSE PHYSICIAN required. Pre-registration candidates eligible.

Applications, with copies of testimonials, should be forwarded to Group Secretary, Southampton Group Hospital Management Committee, Bullar Street, Southampton, as soon as possible.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (274 Beds.) RESIDENT HOUSE SURGEON required. Pre-registration candidates eligible.

Applications, with copies of recent testimonials, should be forwarded to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GENERAL HOSPITAL. (474 Beds.) RESIDENT HOUSE PHYSICIAN required mid-November. Pre-registration candidates eligible.

Applications, with copies of testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

ST. ALBANS (near), HERTS. NAPSBURY MENTAL HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER, full-time, required. Some experience in psychiatry desirable. Single accommodation available. The appointment will be from a date not later than 14th December, 1957.

Apply to Medical Superintendent by 2nd November, 1957.

ST. ALBANS CITY HOSPITAL, St. Albans, HERTS. (384 Beds.) HOUSE SURGEON (House Officer grade) required immediately for 1 of the 2 surgical teams. (Post recognised for F.R.C.S.) Preference given to candidates seeking post under the Medical Act, 1950.

Applications to Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

STOCKPORT INFIRMARY, Stockport. (163 Beds). Applications are invited for the post of SENIOR HOUSE OFFICER (Assistant Resident Surgical Officer) (general and orthopædics), vacant 18th November, 1957. The post is recognised for the F.R.C.S.

Applications, stating age, experience and qualifications, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw Heath, Stockport.

STOCKPORT AND BUXTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following post, which is approved for pre-registration purposes.

Stockport Infirmary (163 Beds)

HOUSE OFFICER (general surgery and gynæcology). Recognised for the F.R.C.S. Vacant now.

Applications, with copies of 2 testimonials, to the Group Secretary, 59B, Shaw-heath, Stockport.

STOCKPORT. CHERRY TREE HOSPITAL. (Isolation, 96 Beds.) Locum SENIOR HOUSE OFFICER required for the period 29th October to 30th November, 1957.

Applications to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. Applications invited for HOUSE OFFICER (Medical)—vacant now. Recognised pre-registration.

Detailed applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (815 Beds.) HOUSE OFFICER (general surgery) required, vacant now. Pre-registration post. Hospital recognised for F.R.C.S.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. (455 Beds.) SENIOR HOUSE OFFICER (ophthalmology) required. Recognised F.R.C.S. and D.O.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

SUTTON-IN-ASHFIELD. KING'S MILL HOSPITAL. (257 Beds. Recognised for the M.R.C.O.G. Gynæcology.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (obstetrics and gynæcology) required. Married accommodation available. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 4th November, 1957, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SUTTON. BELMONT HOSPITAL. St. Ebba's and BELMONT GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for appointment of PSYCHIATRIC REGISTRAR at above Hospital which is principally concerned with the treatment of neuroses and the early psychoses. There are ample opportunities for research and the Hospital, which is recognised for the D.P.M., takes an active part in teaching in association with teaching hospitals. Candidates may visit the Hospital by appointment with the Acting Physician-Superintendent.

Application forms may be obtained from the Group Secretary, Group Office, Belmont Hospital, Brighton-road, Sutton, Surrey, and completed forms (5 copies) should be returned to him within 2 weeks of the appearance of this advertisement.

SWANSEA HOSPITAL (413 Beds) Swansea. Glantawe HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in the Gynæcological Department at the above Hospital.

Applications, with full particulars, should be addressed to the Hospital Secretary. T. E. JONES, Group Secretary.

TAUNTON AND SOMERSET HOSPITAL, TAUNTON, SOMERSET. (423 Beds.) HOUSE OFFICER (General Medicine) required 11th November, 1957. Pre-registration post.

Applications, stating age, nationality, qualifications, and the names of 2 referees, to the Group Secretary, c/o Musgrove Park Hospital, Taunton, immediately.

TAUNTON AND SOMERSET HOSPITAL. Senior House OFFICER (general medicine) required end of October. Post also gives opportunity of work in Area Pathological Laboratory if desired.

Applications, stating age, nationality and qualifications, together with the names of 2 referees, should be forwarded to the Group Secretary, Taunton Hospital Management Committee, Taunton and Somerset Hospital, Musgrove Park Branch, Taunton, Somerset.

TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required for Neuro-Surgical Department of 24 Beds opening on the 1st November, 1957. Post offers wide experience in Neurology. No previous experience necessary.

Applications, with names of 2 referees, to Hospital Secretary, Hemlington Hospital, Middlesbrough.

TREDEGAR GENERAL HOSPITAL, Monmouthshire. RHYMNEY AND SIRHOWY VALLEYS HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SURGICAL OFFICER (Junior Hospital Medical Officer grade) required for Surgical Unit at above Hospital. Duties are those of Assistant to General Surgeon; staff includes also House Surgeon. Commodious family flat.

Apply, with full particulars and stating names of 2 referees, to Secretary.

TUNBRIDGE WELLS (near). PEMBURY HOSPITAL, PEMBURY. Applications invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer). Post vacant 1st November, 1957. The post is tenable for 12 months in the first instance and recognised for the D.A. and F.F.A.R.C.S.

Apply, stating age, qualifications and experience, together with 3 testimonials, to Group Secretary, Sherwood-park, Pembury-road, Tunbridge Wells.

TUNBRIDGE WELLS (near). PEMBURY HOSPITAL, PEMBURY. TUNBRIDGE WELLS GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for vacant post of HOUSE SURGEON in Orthopædic Unit. Pre-registration post.

Apply, stating age, qualifications, together with testimonials, to Surgeon Superintendent.

WIGAN (near). WRIGHTINGTON HOSPITAL. Senior HOUSE OFFICER required. 247 Beds for orthopædic, mainly tuberculosis, and 94 Beds for chest cases. Salary and board charges in accordance with National scales.

Applications to Secretary with 2 references.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (315 Beds.) Locum HOUSE OFFICER required in Department of Obstetrics and Gynæcology for 2 to 3 weeks from mid-December.

Applications, with copies of 2 testimonials, to Group Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (315 Beds.) HOUSE SURGEON (post recognised by Royal College of Surgeons) required for general surgery with some E.N.T. duties. Approved pre-registration post. Vacant 1st December.

Applications, with copies of 2 testimonials, to Group Secretary.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL (315 Beds). SENIOR HOUSE OFFICER (orthopædics) required. Post recognised F.R.C.S. Wide experience available under Area Orthopædic team. Appointment for 6 months in first instance. Vacant 11th November.

Applications, with copies of 2 testimonials, to the Group Secretary.

WAKEFIELD. STANLEY ROYD HOSPITAL. Locum Tenens JUNIOR HOSPITAL MEDICAL OFFICER in Psychiatry required. Salary £19 5s. per week. Accommodation for single person at charge of £3 5s. 6d. per week.

Address written applications to W. BOWRING, Group Secretary. Pinderfields General Hospital, Wakefield.

WARRINGTON INFIRMARY. Applications are invited from Males and Females for the post of RESIDENT CASUALTY OFFICER (graded as Junior Hospital Medical Officer) at the above Hospital. The post becomes vacant on 1st November, 1957, and is recognised for the F.R.C.S. Scale of salary £852 10s.–£55–£1182 10s., less a deduction of £170 for the residential emoluments. A whole-time Senior Hospital Medical Officer is in charge of the Department.

Applications, stating age, experience and qualifications, should be forwarded to—

HENRY L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WELSH REGIONAL HOSPITAL BOARD.

SURGICAL REGISTRAR (plastic surgery), St. Lawrence Hospital, Chepstow (177 Beds). Expected to visit other hospitals in South Wales area. Considerable opportunities for training in specialty. Accommodation for single person.

REGISTRAR (psychiatry), Morgannwg Hospital, Bridgend (all modern treatments, active outpatient clinics), Child Guidance Clinic and Psychological Department. Within easy reach of University of Wales. Accommodation available.

Registrar (pædiatrics), Morriston Hospital, Morriston, near Swansea. Resident.

REGISTRAR (pædiatrics), based Merthyr General Hospital, Merthyr, to serve Merthyr and Aberdare Hospital Management Committee.

2 REGISTRARS (general surgery), Llanelly. Resident.

Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WINDSOR. KING EDWARD VII HOSPITAL House PHYSICIAN required, Male or Female, for post vacant 1st December. Pre-registration post.

Applications, stating age, qualifications with dates, and nationality, and copies of 3 recent testimonials, to Secretary, by 6th November.

WINDSOR. KING EDWARD VII HOSPITAL. House SURGEON IN GENERAL AND ORTHOPÆDIC SURGERY required, Male or Female, for post vacant 11th December. Pre-registration post—Hospital recognised for F.R.C.S.

Applications, stating age, qualifications, with dates, and nationality, to Secretary by 8th November.

WINDSOR. KING EDWARD VII HOSPITAL. House PHYSICIAN (Pædiatrics) required. Male or Female, for post vacant 13th December. Pre-registration post—Hospital recognised for D.C.H. Successful candidate will be resident at Old Windsor Unit of the Hospital.

Applications, stating age, qualifications, with dates, experience and nationality, to Secretary by 8th November.

WOLVERHAMPTON. NEW CROSS HOSPITAL. (634 Beds.) SENIOR HOUSE OFFICER or HOUSE OFFICER (pre-registration post) in Medicine. Vacant now.

Applications to the Hospital Secretary.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY. SENIOR HOUSE OFFICER required. 100 Bed and busy Outpatient Department. Recognised for F.R.C.S. and D.O. examinations.

Applications to Secretary as soon as possible.

WOLVERHAMPTON. NEW CROSS HOSPITAL. (634 Beds.) HOUSE OFFICER (pre-registration) in General Surgery. Vacant now.

Applications to the Hospital Secretary.

WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTHLANDS HOSPITAL, SHOREHAM-BY-SEA, SUSSEX. ORTHOPÆDIC REGISTRAR to the Group required. Duties mainly at Southlands; also general surgical duties. Post vacant 31st December, 1957.

Application form, to be returned within 14 days from the appearance of this advertisement, obtainable from the undersigned. A. V. OAKTON, Group Secretary.

129, Brighton-road, Worthing, Sussex.

NEW ZEALAND. QUEEN ELIZABETH HOSPITAL, ROTORUA, NEW ZEALAND. There are 2 vacancies for REGISTRARS at the Queen Elizabeth Hospital, Rotorua, New Zealand, a national institution engaged in research into, and the treatment of rheumatoid arthritis and other rheumatic diseases.

Further additional information, together with particulars of salaries, &c., may be obtained on request from the High Commissioner for New Zealand, 415, Strand, London, W.C.2.

U.S.A. JEWISH CHRONIC DISEASE HOSPITAL, BROOKLYN, N.Y. Clinical pathology. 1st or 2nd year RESIDENT. Fully approved 800 Bed active research hospital. 250,000 tests annually; includes steroid, enzyme and histochemistry, electrophoresis, hormone assays and radioisotopes.

Apply: Jewish Chronic Disease Hospital, E. 49th St. and Rutland-road, Brooklyn, N.Y.

U.S.A. BETHESDA HOSPITAL, Cincinnati 6, Ohio, U.S.A. INTERNS—Rotation through Obstetrics, Medicine, Pediatrics and Surgery in a 12-month broad teaching programme. We desire applications from graduate medical doctors giving full details in first letter. $210 per month stipend; access to inexpensive meals; furnished room; uniforms; laundry; hospitalisation, and will advance passage one way.

Please apply to the Superintendent.

U.S.A. ONONDAGA GENERAL HOSPITAL, 423, West Onondaga-street, SYRACUSE 4, N.Y. RESIDENCY available for good student at above Hospital, a general surgical medical hospital. Room and board plus good salary.

Apply Administrator.

NORTHERN IRELAND HOSPITALS AUTHORITY. Applications are invited for a whole-time post as REGISTRAR in Anæsthetics at hospitals managed by the South Down Hospital Management Committee. The terms and conditions will be in accordance with the application of the Spens report to Northern Ireland.

Applications to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44/46, Queen-street, Belfast, and to be returned not later than 9th November, 1957.

Public Appointments

ISLINGTON METROPOLITAN BOROUGH COUNCIL and LONDON COUNTY COUNCIL. Applications invited from registered medical practitioners with D.P.H. for joint appointment as DEPUTY MEDICAL OFFICER OF HEALTH in Metropolitan Borough of Islington and MEDICAL OFFICER in London County Council Public Health Department. Person appointed will be required to give 3 sessions a week to County Council work and remainder of his/her time to Borough Council work, the duties therefore comprising work in both personal and environmental health services. Salary for the appointment in range £1618–£1956 (starting point dependent on local government experience).

Application forms obtainable from Medical Officer of Health, Town Hall, Upper-street, N.1, to be returned by 15th November. (1944.)

NAVY, ARMY AND AIR FORCE INSTITUTES. Applications are invited from general practitioners in the undernoted towns for the appointment in a part-time capacity as MEDICAL OFFICERS to this Corporation. Successful applicants would be required to examine and report on the condition of employees of the Corporation who may be referred to them from time to time. Fees for this work will be paid on a scale agreed with the British Medical Association.

Applications, giving details of qualifications and experience, should be sent to the Chief Medical Officer, Navy, Army and Air Force Institutes, Kennington-lane, London, S.E.11, not later than 9th November, 1957.

The towns for which applications are invited are:—

SHEFFIELD	DERBY	GRANTHAM
BEVERLEY (YORKS)	DARLINGTON	STAMFORD

CORNWALL COUNTY COUNCIL. Applications are invited from registered medical practitioners who have had experience in Child Guidance work for the whole-time appointment of COUNTY PSYCHIATRIST. The person appointed will be responsible to the County Medical Officer for the general administration of the County Council's Mental Health Services, and the duties will include the certification of mentally defective persons, the holding of Child Guidance Clinics, and such other duties in connection with Mental Health as may be assigned to him from time to time. Applicants should hold the Diploma in Psychological Medicine, and be recognised or eligible for recognition by the Ministry of Education and by the Board of Control for the ascertainment and certification of educationally subnormal children and mentally defective persons. Salary will be on the scale of £1520 rising by annual increments to £1955 a year, the initial salary depending on previous experience of the candidate selected. A car is essential, and there will be a travelling allowance in accordance with the County scale. The post is subject to the Local Government Superannuation Acts, and the successful candidate will be required to pass a medical examination.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials and the names of 2 persons to whom reference may be made, should reach the County Medical Officer, County Hall, Truro, not later than 16th November, 1957.

E. T. VERGER, Clerk of the County Council.

County Hall, Truro.

DURHAM COUNTY COUNCIL. HEALTH DEPARTMENT. ASSISTANT MATERNITY AND CHILD WELFARE MEDICAL OFFICER. Applications are invited from registered medical practitioners (Female). Commencing salary £1050 p.a., rising by annual increments of £50 and £55 to £1475 p.a. Travelling expenses will be paid in accordance with a scale approved by the Whitley Council.

The appointment is subject to certain conditions, particulars of which may be obtained from the County Medical Officer of Health, Shire Hall, Durham, to whom applications, together with the names of not more than 3 referees, should be sent not later than 9th November, 1957. Canvassing members of the Council is prohibited.

J. K. HOPE, Clerk of the County Council.

SOUTH CORK BOARD OF PUBLIC ASSISTANCE. 2 vacancies for JUNIOR RESIDENT MEDICAL OFFICERS. Pathological Department, St. Finbarr's Hospitals. Remuneration: £502 p.a.

Application form and particulars may be obtained from the County Manager, Courthouse, Cork, with whom completed applications should be lodged not later than 5 P.M. on Monday, 11th November, 1957.

BUCKS COUNTY COUNCIL. Applications are invited from registered medical practitioners for the appointment of ASSISTANT COUNTY MEDICAL OFFICER (Female) in the High Wycombe area. Preference will be given to applicants possessing a Diploma in Public Health or a Diploma in Child Health, and experience in maternity, school medical and child welfare work. Salary within the scale £1050–£1475 p.a., the commencing salary being fixed according to qualifications and experience. Travelling and subsistence allowances on the County Council's scale will be paid. The appointment is superannuable and subject to medical examination.

Further particulars and forms of application may be obtained from the County Medical Officer, County Offices, Aylesbury, to whom completed applications must be returned by 9th November, 1957.

R. E. MILLARD, Clerk of the Bucks County Council.

County Hall, Aylesbury, October, 1957.

GATESHEAD. COUNTY BOROUGH OF GATESHEAD. ASSISTANT MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. Applications are invited from duly qualified medical practitioners in possession of the D.P.H., C.P.H., or D.C.H., for the post of Assistant Medical Officer in the Public Health Department. Salary will be within the scale commencing £1050–£50–£1200–£55–£1475 p.a., having regard to the experience of the candidate in similar posts. The appointment is superannuable, subject to medical examination, and is terminable by 1 month's notice on either side.

A list of the duties of the office may be obtained from the Medical Officer of Health, Greenesfield House, Mulgrave-terrace, Gateshead, to whom applications, stating age and experience and accompanied by not more than 3 recent testimonials, should be sent in envelopes endorsed "Assistant Medical Officer," within 14 days of the appearance of this advertisement.

C. D. JACKSON, Town Clerk.

Town Hall, Gateshead, 8, 11th October, 1957.

MANCHESTER. CITY OF MANCHESTER. Health DEPARTMENT. MEDICAL OFFICER required for administrative and clinical duties in the General Services Division of the Health Department. D.P.H. desirable but not essential. Salary £1050–£1475.

Application forms, obtainable from the Town Clerk, Town Hall, Manchester, 2, should be returned to him not later than 9th November, 1957.

WARWICKSHIRE COUNTY COUNCIL. County Medical OFFICER OF HEALTH'S DEPARTMENT. ASSISTANT COUNTY MEDICAL OFFICERS OF HEALTH (Male or Female). Applications are invited from registered medical practitioners for the above 2 permanent appointments, which are in the Sutton Coldfield and Rugby Areas of the County respectively. Preference will be given to those holding the D.P.H. or D.C.H. and with previous experience. Conditions of service and salary (£1050 to £1475) will be in accordance with the Whitley Council. The successful candidate will be required to provide a motor car in the performance of duties, for which Whitley Council scale allowances are payable.

Further particulars, including details of duties, and application forms may be obtained from the County Medical Officer of Health, Shire Hall, Warwick. Closing date for applications is 16th November, 1957.

L. EDGAR STEPHENS, Clerk of the Council.

Shire Hall, Warwick.

AUSTRALIA. NEW SOUTH WALES DIVISION OF MENTAL HYGIENE. Dr. Donald Fraser, the New South Wales Inspector-General of Mental Hospitals, will personally interview in London applicants for appointment as PSYCHIATRISTS in the New South Wales Division of Mental Hygiene. Vacancies exist for DEPUTY MEDICAL SUPERINTENDENTS (Salary £A2,240 p.a.) and SENIOR MEDICAL OFFICERS (Salary £A2,065 p.a.). Appointees will be eligible for promotion to higher positions as vacancies occur. An extensive research programme has been planned in conjunction with the Professor of Psychiatry at Sydney University. Applicants must be eligible for registration in New South Wales and possess a recognised Diploma in Psychological Medicine or equivalent qualifications.

Dr. Fraser will be available until 30th November, 1957, and requests for interview should be addressed to the Agent General for New South Wales, 56, Strand, London, W.C.2 (Tel.: TRAfalgar 7477).

WESTERN REGION OF NIGERIA. Applications are invited from doctors with medical qualifications registrable in the United Kingdom for the following Specialist appointments. Duties mostly at Adeoyo Hospital, Ibadan, but will include visits to other Government hospitals in the Region.

SPECIALIST ANÆSTHETISTS. Candidates must possess F.F.A.R.C.S., or equivalent, and at least 6 years' post-registration experience in full-time anæsthetist appointments.

SPECIALIST PHYSICIAN. Candidates must possess M.R.C.P. or equivalent, with at least 6 years' post-registration experience in specialist medical appointments.

Appointments (1 tour of 12–24 months in the first instance) may be either :—

(*a*) on contract with gratuity (taxable) on satisfactory completion of contract at rate of £37 10s. for each completed period of 3 months' service (including leave), or

(*b*) from National Health Service, candidates retaining superannuation rights and receiving gratuity (taxable) of 20% of aggregate of salary.

Salary under (*a*) £2664 a year and (*b*) £2220.

Quarters provided at low rental. Taxes at local rates. Annual leave permissible : generous home leave granted after each tour of 12–24 months. Free return passages for officer, wife and children (up to 3).

Application forms from Director of Recruitment, Colonial Office, London, S.W.1, quoting BCD.117/410/028.

EDINBURGH. CITY OF EDINBURGH PUBLIC HEALTH DEPARTMENT. ASSISTANT MEDICAL OFFICER required by Child Welfare Department. Salary scale £1050–£50—£1200–£55—£1475.

Apply, giving particulars of experience, qualifications, age, to The Medical Officer of Health, Johnston-terrace, Edinburgh, 1, within 14 days of the date of this advertisement.

General Practice

For an ***Executive Council post*** *(England and Wales) apply on form* **E.C.16A** *obtainable from the council. Mark envelope "Vacancy."*

LLANSANTFFRAID, MONTGOMERYSHIRE. Applications invited for VACANCY (rural). List at present approximately 1587. Residence and Surgery will be available by purchase. Apply on Form E.C.16A, before Saturday, 9th November, 1957, to :—T. C. BARNES, Clerk of the Council.

Montgomeryshire Executive Council, Community House, Newtown, Mont.

Miscellaneous

Calmic Limited require the services of a Technical Executive to control the development of medical preparations intended for home and established overseas markets. Successful applicant will be required to take charge of the research, analytical and biochemical laboratories. Medical qualifications essential and clinical experience desirable.

Please give full particulars of experience, salary required and references, to Managing Director, Calmic Limited, Crewe Hall, Crewe.

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BENGER LABORATORIES LIMITED, manufacturers of ethical medical preparations, have vacancies in their laboratories offering considerable scope for advancement for Research Pharmacologists, both graduate and non-graduate.

Applications are invited from University graduates in Physiology, Pharmacology or Zoology, most particularly from those having a special interest in experimental surgery. Non-graduate laboratory assistants with previous experience in Pharmacology are also required.

The work, which is carried out in close co-operation with other members of the Pharmacology and Biochemistry Research Sections, is extremely interesting and varied. Every encouragement and opportunity is given for the display of initiative and originality.

The salary will depend very much on the experience, qualifications and age of the applicant, but a wide range is contemplated. A Contributory Pension Scheme is in operation.

The well-equipped laboratories are set in ideal country surroundings and there are good facilities available for sport and recreation.

Applications, which will be dealt with in strict confidence, should be addressed to the Secretary, Benger Laboratories Limited, Holmes Chapel, Cheshire.

Assistant required in general practice, with a view to partnership, in Toronto. Good general and obstetric experience required.—Address No. 335, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Required, Assistant for general practice in pleasant practice in Yorkshire country town. Obstetric experience desirable. Own car essential. House available. Salary by arrangement.—Address No. 336, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Korea. Doctor (Female) required with paediatric experience ; age preferably between 26 and 40. Contract 1 year renewable. Salary £1000 p.a. Equipment allowances and fares paid. 1 month's holiday per year. Duties in Pusan, Korea. —Apply Foreign Relief Secretary, Save the Children Fund, 12, Upper Belgrave-street, S.W.1. Telephone SLOane 9171.

The British Journal of Medical Hypnotism. Quarterly, £2 2s. p.a.—Orders to the publishers, 4, Victoria-terrace, Hove, 3, Sussex.

Doctors requiring applications, theses copied: Write to MANTON (WESTMINSTER) LTD., 98, Victoria-street, S.W.1 (VIC 0141) who are specialists.

Have you a secretarial problem, perhaps a paper you wish typed? Confidential, quick, efficient service offered by ex medical secretary, 10 years' experience. Excellent knowledge medical terminology, able to transcribe any writing. Own typewriter.—Address No. 337, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Microscopes. Immediately available from Stock. Largest selection of all types. Terms if required.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

Park Lane. Outstanding professional suite ground floor, own first-class street entrance. 770 sq. ft. net. Eminently suitable highest class medical or dental practice. Long lease at £1400 p.a. including rates and C.H.—Apply GOODWIN & CO., 139, Park-lane, London, W.1. MAYfair 7081.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimens of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

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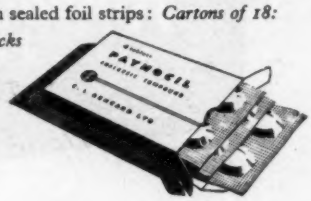

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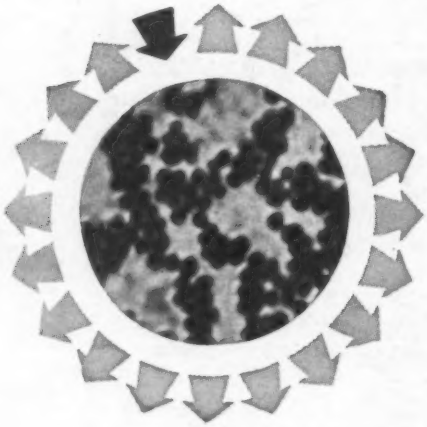

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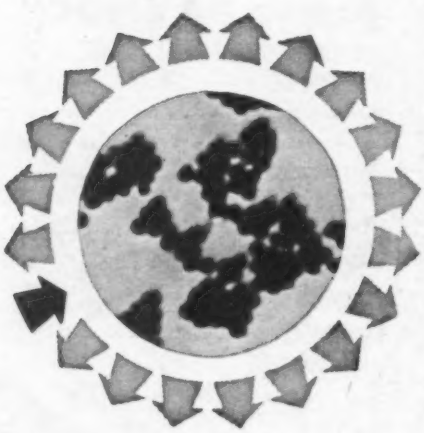

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